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The Office for Domestic Preparedness Training Strategy

Executive Summary

Office for Domestic Preparedness
Training Strategy

An Introduction to ODP

The Office for Domestic Preparedness (ODP) is part of the United States Department of Justice's Office for Justice Programs (OJP). Its predecessor, the Office for State and Local Domestic Preparedness Support (OSLDPS) was established in April of 1998. The Mission of ODP is to build and enhance domestic preparedness capacity within state and local governments to assure effective response to Weapons of Mass Destruction (WMD) incidents. To fulfill this mission, ODP operates programs for equipment, training, exercises, technical assistance and research and development.

Executive Summary
An Introduction to The ODP Training Strategy

The Office for Domestic Preparedness (ODP) Training Strategy focuses on the most basic of issues and questions confronting the preparation of our nation to respond to WMD incidents. These questions include: **Who** should be trained? **What tasks** should they be trained to performed? **Which training/instruction methods and training sites** need to be paired with which tasks to maximize success in training? **What methods** are most capable of evaluating competency and performance upon completion of training; and **What gaps** need to be remedied in existing training to assure consistency with the findings of the training strategy?

Key Questions Addressed in ODP Training Strategy

- Who should be trained?
- What tasks should they be trained to perform?
- Which training instruction/delivery methods and training sites should be paired with which tasks to maximize success in training?
- What methods are most capable of evaluating competency and performance upon completion of training?
- What gaps need to be remedied in existing training to assure consistency with the findings of The Training Strategy?

Part I, Prominent Approaches to the Development, Delivery, and Revision of Training Programs, **Part II**, Model Process for WMD Training, and nine appendices constitute the bulk of The ODP Training Strategy. This Executive Summary highlights the **Fundamentals of the WMD threat**, the **Strategic approach to training** and the **Findings, Implications and Conclusions** that approach suggests so that they may be easily understood and implemented, and their impact expedited and maximized.

FUNDAMENTALS OF THE WMD THREAT

The threat of incidents employing Weapons of Mass Destruction (WMD) - nuclear/radiological, biological, chemical weapons and conventional explosives - is well documented and demands a response. Groups and individuals declaring this threat/issue to be valid cite the potential for unprecedented levels of devastation to be brought by such an incident, focusing on the latter portion of the "low probability, high consequence" mantra leveled at WMD. They also stress an overall lack of national preparedness to effectively respond to WMD incidents, as well as exponential increases in our society's inability to be inclusive and related increases in alienation coupled with greater knowledge of and easier access to the necessary ingredients for WMD. This combination is seen as

suggesting a "when, not if" dimension to full execution of the WMD threat. This dimension was coldly and demonstratively illustrated in attacks demolishing New York City's World Trade Center and significantly damaging the Pentagon in September, 2001. Other recent terrorist incidents around the globe and within the United States involving either conventional explosives or other weapons of mass destruction, including the Anthrax attacks in October 2001, underscore and confirm the legitimacy of the WMD threat.

Response to the Threat

The response of the federal government's legislative and executive branches to the WMD threat has been manifold with over 40 federal agencies and more than a dozen congressional committees sharing the lead. This response has been further magnified with the White House's creation of the Office of Homeland Security and complementary actions by the United States Congress.

A significant portion of the federal government's response to the WMD threat has been embodied in the United States Department of Justice's Office of Justice Programs (OJP). In 1998, the Department of Justice (DOJ) established ODP's predecessor, the Office for State and Local Domestic Preparedness Support (OSLDPS) within the OJP. The ODP provides funds and facilitation for equipment, training, exercises, and technical assistance to state and local emergency responders with the ultimate goal of building a solid, sustained domestic preparedness capacity throughout the United States. Successful achievement of ODP's mission and execution of its programs requires constant, ongoing assessments and reassessments of relevant information and knowledge.

An abundance of domestic preparedness training providers, courses, and facilities exist at all levels of government throughout the United States, as well as in the private sector. These resources must satisfy several million individual responders in need of initial training and sustainment training. However, the availability of training courses and facilities often does not imply that sufficient funds are available to actually execute training. In fact, funding availability to mobilize and conduct training is an exceptional and significant problem. Part of the difficulty may be that resources and workload are not well coordinated and that little, if any, central strategy exists to conduct training that meets training needs. *The ODP Training Strategy* provides guidance for planning, organizing and delivering the most appropriate and successful training for the most appropriate audience. Accordingly, it is a valuable resource for maximizing the impact of available funding.

Complexity of the WMD Threat

Numerous needs assessments, across disciplines and jurisdictions, have consistently identified a lack of training as a major obstacle to domestic preparedness. This finding is especially consequential alongside the realization that at least 10 distinct disciplines/professional groups are involved in responding to WMD incidents, performing over 152 separate tasks. Further, both the disciplines and tasks are likely to involve multiple dimensions in a WMD incident.[1]

These complexities are spread across an emergency responder community in the United States that is estimated at over 4 million individuals in thousands of agencies in some 3,400 jurisdictions - numbers which increase and regenerate due to attrition, reorganizations and especially due to advances in knowledge, technology and procedure. In this context, a strategic approach to successful

implementation of training and exercise programs to build domestic preparedness response capacity is required.

A STRATEGIC APPROACH TO TRAINING

The *ODP Training Strategy* provides a strategic approach to training and a national training architecture for development and delivery of ODP programs and services. The research, the work, and the goals of The *ODP Training Strategy* center on addressing and answering five critical questions encompassing smaller, derivative issues and concerns. The Findings and Implications section, and the Conclusion section within this Executive Summary address these questions specifically:

Who should be trained?

What tasks should they be trained to perform?

Which training instruction/delivery methods and training sites should be paired with which tasks to maximize success in training?

What methods are most capable of evaluating competency and performance upon completion of training?

What gaps need to be remedied in existing training to assure consistency with the findings
of The Training Strategy?

Tasks of the Strategic Approach

The initial task for *The ODP Training Strategy* was a thorough examination and documentation of prominent approaches to the development, delivery and revision of training programs. It was clear that no topic-specific models were available to direct the curricular processes related to response to incidents involving Weapons of Mass Destruction. The starting point, therefore, was the existing literature addressing teaching and training professionals in activities somewhat consistent with those of a WMD incident. The work for this task is fully documented in *Part I, Prominent Approaches to the Development, Delivery and Revision of Training Programs*, which provided the Strategy with an understanding of six issues critical to all learning endeavors.

Key Issues for Part I

- Different ways that people are able to learn and disseminate information and knowledge;
- Different ways curricula can be constructed;
- Different ways to identify what should be learned and different approaches to how it could be learned;
- Different ways to construct and integrate courses;
- Different ways to teach and deliver training courses: and
- Different ways to evaluate and test the learning of individuals and groups.

Succinctly stated, the information contained in Part I educated ODP regarding the existence of numerous approaches to learning and the relationship of those approaches to success in fulfilling the ODP mission.

The next major task for *The ODP Training Strategy* was to develop and apply a step-by-step strategic process for training specific to WMD incidents - a model process for WMD training. The work for this task is embodied in *Part II, Model Process for WMD Training.*

To develop the model process, the numerous protocols described in the literature review of Part I were synthesized, condensed, made appropriate to, and made specific for ODP-related training. This adherence to a legitimate, literature-based process provided the structure and rigor needed in developing *The ODP Training Strategy*. To ensure accuracy and objectivity, it required the input of external Subject Matter Experts (SMEs) from throughout the nation's emergency responder community, and relied upon research, examination, discovery and independent validation and revalidation, distrusting the potential bias inherent in conventional opinion and wisdom. One consistent caveat emerged from the work of this task - consistent with ODP's constant assessment and reassessment policy - neither knowledge, process or people are stagnant, hence a strategic approach should not be a one-time event, but a continuum of effort with a beginning, but no finality. The model process that was finally applied is illustrated on the following page.

Model Process for WMD Training

❶ Determine the "Mission" of Training Initiative.

❷ Identify the Disciplines or Organizations Housing Emergency Responders to WMD Incidents.

❸ Develop Matrix Task Needs Assessments for Emergency Responders in WMD Incidents.

❹ Establish the Tasks (Knowledge, Skills, and Abilities) Unique to WMD Incidents.

❺ Determine the Criticality of Each Task, as Well as the Complexity of Each Task.

❻ Specify the Training Methods and Site Most Appropriate for Each Task.

❼ Articulate Enabling Objectives or Learning Objectives for Each Task.

❽ Identify the Tasks not Addressed in Existing Training.

❾ Develop or Influence Training for Those Tasks.

❿ Courses Should be Sequenced Based on Complexity and Competencies/Proficiencies.

The process shown in the steps above was necessary to objectively determine and document the training mission, the training audience, work tasks performed in responding to WMD incidents and training needs. It was also critical to matching types of training with learning objectives, and delivery and evaluation methods.

To make these determinations and discoveries, and to document them, the application of the process was done in a sequential fashion. That is, after the completion of each step, there was reflection as to what that step suggested for the next. There was not a *pre hoc* determination of each step, each direction, and each element. The process provided a general blueprint or map, but it was constantly subjected to re-examination and revalidation.

At the completion of each task or step in applying the process, there was discussion, reflection, and examination of the participants' confidence in the comprehensiveness and results of that step. Further examination was appropriate in many instances, prior to moving to the next step.

The general evolution of the strategic process development and application followed a *graduated sequence* of activity representing an exhaustive application of the expertise of each tier, followed by the employment of an expanded group.

Graduated Sequence

Step 1 ODP management and administration frames initiative

Step 2 Small group of planners explore all possible models and variations that can be applied to WMD training

Step 3 Larger group of ODP staff critique strategic approaches being considered

Step 4 Results submitted to expanding iterations of Subject Matter Experts for input and final review

The graduated sequence is further evident in a more detailed chronology of events occurring during the conduct of *The ODP Training Strategy*. This chronology is presented on the next page.

Chronology of Events in the Application of the Strategic Planning Process

July, 1999

- ODP Director expresses concern with curricula development potential and ability to meet present and future needs of jurisdictions served.
- ODP Director begins dialogue with staff to develop strategic process and initiates first step of mission statement development to provide guidance for all subsequent steps.

September, 1999

- Development of strategic training process discussed at the National Domestic Preparedness Consortium (NDPC) meeting in Seattle (27^{th} - 30^{th}) and initial plans developed to proceed.
- Collaboration begun using three experts - a strategic planner, a WMD training developer, and an educational curriculum development specialist.
- Draft and revise "Architecture for WMD Training Delivery" - becomes basis for "Part I, Prominent Approaches to the Development, Delivery, and Revision of Training Programs" - is guided by taxonomies of education objectives common to all major curriculum development initiatives.

November, 1999 - March, 2000

- Continue to draft and revise "Architecture for WMD Training Delivery" (earlier draft of the Training Strategy for ODP continues with Part II initial drafting).
- ODP staff completes mission statement development including goals and objectives.
- Staff revisits and revises existing strategic plans related to training and training delivery focusing on who should be trained and what tasks they should be trained to perform.
- Work on task questions draws on research of ODP National Needs Assessment, (Responding to Incidents of Domestic Terrorism: Assessing the Needs of State and Local Jurisdictions - 1999).

July, 2000

- Meetings of Subject Matter Experts (SMEs) begin to address questions of who should be trained, what tasks they should be trained to perform, and whether existing training addressed all necessary tasks.

August, 2000 - December, 2000

- Full process described to the participants at the NDPC meeting. Process is discussed and approved.
- Key decision reached regarding expanded questionnaire of SMEs.
- Administration and analysis of questionnaire.

January, 2001 - March, 2001

- Questionnaire analysis results reviewed by ODP staff. Additional SME meetings conducted to review questionnaire responses and perfect learning objectives related to survey training tasks.
- Duplicative training tasks deleted following SME review.

April, 2001 - August, 2001

- ODP staff initiates and completes the assessment of which gaps need to be remedied in existing training by comparing SME approved tasks against existing WMD training programs.
- Concurrently, initial collaborators review product of strategy research produced by administrators, staff, and external SMEs.

FINDINGS AND IMPLICATIONS

The findings and implications of *The ODP Training Strategy* are prescriptive. They articulate or point toward a desired "state" - what ought to be. Given the multiplicity of disciplines, tasks and dimensions and the potential permutations and combinations, the findings and implications are numerous. However, exceptional themes did emerge. These are provided and organized consistent with the five major questions introduced at the initiation of *The ODP Training Strategy* in 1999.

Who should be trained?

Discussion

The most basic of the discussions among ODP staff and the SMEs surrounded the comprehensive list of "disciplines" involved in or affected by a WMD incident. Of course, the list is endless if taken literally, since everyone within a jurisdiction can be affected. It was determined to be over-reaching to include disciplines such as retail businesses, recreational facilities managers, and other similar groups. While affected, they do not represent a training target.

Findings

The Strategy identified 10 key disciplines whose personnel should be trained to respond to incidents involving WMD. These disciplines included Emergency Management Agencies, Emergency Medical Services, Firefighters, Governmental Administrative, Hazardous Materials Personnel, Law Enforcement, Public Health, Health Care, Public Safety Communications, and finally Public Works,. The following are definitions and categories relative to these disciplines.

Disciplines Requiring WMD Training

Emergency Management Agency
Organizations, both local and state, which are directed to coordinate preparation, recognitions, response, and recovery for WMD incidents. Titles - state and local EMA, voluntary organizations (VOAD), professional associations (American Society of Civil Engineers, American Institute of Architects, and so forth), human service agencies, and private agencies supporting EMA activities .

Emergency Medical Services
Individuals who, on a full time, part time or volunteer basis, serve as emergency responders, EMT (basic) and paramedic (advanced) on ground-based and aeromedical services to provide pre hospital care. Titles - emergency responders, EMT (basic), and paramedic (advanced).

Firefighters
Individuals, who on full-time, volunteer, or part-time basis, that provide life safety services including fire suppression, rescue, arson investigation, public education, and prevention. Titles - firefighters, company officers, and fire marshal’s office, US&R, and technical rescue.

Governmental Administrative
Elected and appointed officials responsible for public administration of community health and welfare during an incident. Titles - mayors, elected officials, executives, and chief administrative officers (city manager and supporting staff).

Hazardous Materials Personnel
Individuals, who on a part-time, full-time or volunteer basis identify, characterize, provide risk assessment, and mitigate/control the release of a hazardous substance or potentially hazardous substance. Titles - technician, specialist, MMRS, and private companies and contractors supporting hazardous materials activities.

Health Care[2]
Individuals who provide clinical, forensic, and administrative skills in hospitals, physician offices, clinics and other facilities which offer medical care including surveillance (passive and active), diagnosis, laboratory evaluation, treatment, mental health support, epidemiology investigation, evidence collection, along with fatality management for humans and animals. Titles - physicians, nurses, facility management, physician extenders (physician assistants and nurse practitioners), dentists, medical examiners/coroners, therapists, veterinarians, epidemiologists, pharmacists, technicians, security, environmental investigators, and medical records.

Law Enforcement
Individuals, full-time, part-time, or on a voluntary basis, who work for agencies at the local, municipal, and state levels with responsibility as a sworn law enforcement officers." Titles - patrol officer, SWAT, bomb technicians, evidence, supervision/management/incident command, and investigations.

Public Health
Individuals whose responsibilities include the prevention of epidemics and spread of disease, protection from environmental hazards, the promotion of healthy behavior, responding to disasters and assistance in recovery as well as assuring the quality and accessibility of health services. Titles - epidemiologist, environmental engineers, environmental scientists, occupational safety and health specialists, health educators, public health policy analysts, community social workers, psychologists and mental health providers and counselors.

Public Safety Communications
Individuals, who on a full-time, part-time, or volunteer basis, who through technology, serve as a conduit and link persons reporting an incident to response personnel and emergency management, to identify an incident occurrence and help to support the resolution of life safety, criminal, environmental and facilities problems associated with the event. Titles -call takers, shift supervisors, medical control centers, and dispatchers (EMS, police, and fire).

Public Works
Organizations and individuals that make up the public/private infrastructure for the construction and management of these roles within the federal level. The titles/roles include administration, technical, supervision, and craft (basic and advanced) in the areas of environmental services (water quality), solid waster, animal services, water treatment, public buildings, public parks, telecommunications, engineering, equipment services, electric districts, and digital cable.

What tasks should they be trained to perform?

Discussion

The initial inquiry into the tasks necessary to be performed began with ODP staff independently developing a list of tasks for each discipline involved in response to a WMD incident and then reviewing those tasks against tasks identified in ODP's 1999 needs assessment, *Responding to Incidents of Domestic Terrorism: Assessing the Needs of State and Local Jurisdictions*. Gradually through repeated reviews with expanded groups of ODP staff and SME's, an extensive list of tasks was developed by discipline, which professionals would be required to perform prior to, during, and immediately following a WMD incident. There were many duplications of tasks and much discussion turned on the amalgamation of tasks which were substantially the same and crossed all disciplines. These tasks, labeled "Global Tasks," required an examination of similar-appearing tasks as well as those determined to be substantively the same. The overall list of tasks, developed, refined, verified as unique to WMD in the application of the task, and organized by discipline or as applying to all disciplines, became the foundation of the answer to the question "What tasks should be the basis of WMD training?" Tasks were verified and validated by ODP staff and state and local SMEs, and additional information was gathered on each task.[3]

It was determined that a relatively large group of Subject Matter Experts (SMEs) would be surveyed to assess the tasks previously developed by the core group of SMEs. A total of 50 questionnaires from SMEs were received and 235 tasks assessed across 10 disciplines. Each task was assessed multiple times, from two to 18, depending upon the number of SMEs for each discipline. All totaled, 1,019 duplicated tasks were assessed, using twelve variables per task. The specific results of this survey are included in Appendix 1 of The ODP Training Strategy.[4]

Findings

- A total of **152 unduplicated tasks** were identified as comprising the universe of necessary tasks to be performed prior to, during and immediately after WMD incidents. It should be noted that these 152 identified tasks are dynamic and as new threats and responses are articulated, the list may expand or contract (see Appendix 2).

- All disciplines had tasks which were rated as "essential," but one in particular reflected a uniformity of **critical tasks**. The discipline with the highest average rate of criticality for the tasks inherent in that discipline was Emergency Management Agency. This may be due to the integral position of that discipline in the planning, coordination, and recovery regarding a WMD incident.

- Some tasks were common to all disciplines. The category of **Global Tasks** represents those tasks which, in the opinion of the SME groups, were applicable to all disciplines. These tasks represent the building blocks of basic curricular components which are necessary for every discipline. In the curriculum spiral, basic courses must be mastered before advanced courses are attempted. These "Global" tasks can serve as prerequisites or required course components in curricular planning.

Which training delivery or instruction methods and training sites need to be paired with which tasks to maximize success in training?

Discussion

The ODP Training Strategy addressed several delivery issues. It was important to learn that most of the tasks were placed in the lower levels of the cognitive domain. The implication of this finding is that those tasks are most often applicable to traditional methods of instruction. The complexity of the task, the dependence on particular equipment or expertise, location-specific issues, all contributed to the determination of the optimum site and delivery/instruction method of training necessary for each task.

Findings

- The placement of the tasks in and along a taxonomy of educational objectives suggests the type of training needed to affirm performance of the task, as well as the complexity of the training, the site, and the delivery methods or protocols. It allows resolution of issues associated with how and where training should be delivered to best accommodate the discipline-specific needs. The vast majority of all tasks fell within the cognitive domain and were in the lower half of that domain. This suggests that **traditional training methods are appropriate for most of the tasks**, and most of the tasks can be evaluated more easily than would be the case if they were in the higher levels of complexity of cognition. Traditional training methods include self-paced readings, videos, classroom lectures and discussion, and problem solving exercises.

- The **preferred location** for training for most tasks was "on-site" in the agency receiving the training, using those resources available to the agency should the event be real.
- **Centralized delivery of training** was determined to be preferable for a smaller number of tasks, and was viewed as important for exposing personnel to resources which might be available later, and to standardizing training in a controlled situation.

- The **preferred method for providing training** as well as testing or evaluating training was **projects and exercises**. Most specifically this means training methods that allow for demonstration and application of knowledge, skills, and abilities. Consequently, "projects and exercises" connote training emphasizing practical application, which can be conducted in any of several domains; e.g., the classroom and the field. "Simulations," "games," and "exercises" represent far more than an opportunity to display readiness. These are viable

training methods in which the learner recognizes deficiencies, repairs the deficiencies, and "learns" to perform the task. Additionally, training/trainees are evaluated on the competency and proficiency shown. The degree to which the tasks are performed is assessed in a risk-free environment so that when or if the environment is a real WMD event, the performance is more likely to be adequate.

What methods are most capable of evaluating competency and performance upon completion of training?

Discussion

A dominant theme in the literature, as well as in the policies and practices of ODP, is the need to evaluate training. If there are no expectations for the competency or performance of those being trained, there is little chance of determining the degree to which needs are being met.[5] The evaluation of training suggests the degree to which the training is successful, the degree to which knowledge, skills, and abilities are taught, and a level of confidence that the public is being adequately served by the agencies and professionals who are trained. For some tasks, the most appropriate evaluation methods are rather traditional. As the tasks become more complex or require the demonstration of skills and abilities, the evaluation becomes more demonstrative.

Exercises (both small and large), were frequently identified as most appropriate to show competence and evaluate performance. Individual tasks were more "competence" related while group or team tasks were more "performance" related. Indeed, exercises seemed likely to perform not only a critical role as a delivery method but also as an evaluation method.

One aspect of evaluation not addressed by the SMEs, but clearly identified in the literature, is the function of evaluation as a curricular revision tool. If training methods or approaches fail to produce the desired performance or competence, the curriculum should be revised or the methods reexamined to better accomplish the purposes.

Findings

- The **preferred method for** providing training as well as testing or **evaluating training** was **projects and exercises**. Most specifically this means training methods that allow for demonstration and application of knowledge, skills, and abilities. Consequently, "projects and exercises" connote training emphasizing practical application, which can be conducted in any of several domains; e.g., the classroom and the field. "Simulations," "games," and "exercises" represent far more than an opportunity to display readiness. These are viable training methods in which the learner recognizes deficiencies, repairs the deficiencies, and "learns" to perform the task. Additionally, training/trainees are evaluated on the competency and proficiency shown. The degree to which the tasks are performed is assessed in a risk-free environment so that when or if the environment is a real WMD event, the performance is more likely to be adequate.

- While the general preference for methods to test and evaluate training was projects and exercises, some tasks were viewed as amenable to testing using individual testing methods capable of determining competency. "Demonstration" of competence was mentioned frequently as a preferred method of testing, assessed during or independent of exercises. Some of the tasks frequently associated with demonstration of competence involved the development of plans, documentation, and equipment restoration. Written examinations or oral examinations were selected as the most appropriate testing method for tasks such as when to wear PPE, knowledge of different kinds of agents, special hazards of a terrorism incident, maintenance of data inventory, and terms or terminology associated with WMD incidents. These traditional types of evaluation are most appropriate as precursors or prerequisites to performance-measuring exercises and generally appropriate to idiosyncratic, lower-level (Knowledge, Comprehension) cognitive tasks which would then be consolidated or amalgamated in a small group or large group exercise.

What Gaps Need to be Remedied in Existing Training to Assure Consistency with The ODP Training Strategy?

Discussion

The clearest, most straightforward method of determining which tasks were covered by existing training programs was an inspection of the 152 tasks identified by *The ODP Training Strategy* by a team familiar with the training currently provided by ODP, the training under development by ODP, and the training offered or being developed by other federal agencies. This approach was able to identify those tasks being accommodated and, most importantly, those tasks not being accommodated by any training.

The team inspected each task, the learning objectives of each task and matched the task to the knowledge, skills, and abilities produced in existing ODP training. The tasks were categorized as (1) already accommodated in one or more ODP training initiatives or courses, (2) included in courses currently under development, (3) included in courses or training initiatives of a sister agency, or (4) recommended for the development of a new course or the enhancement of an existing course to include the task, knowledge, skill, or ability (See Appendix 4 of *The ODP Training Strategy* for the list of tasks and the gap analysis assessment).

Findings

- Of all unduplicated tasks, 55.3 percent were deemed to be accommodated through existing ODP training. Another 17.8 percent were included in courses currently under development. A few tasks, 9 total, were offered by sister agencies. These results suggest that **ODP has accommodated or is accommodating 73.1 percent of the tasks unique to WMD** identified by different, independent groups of SMEs, using different methodologies. An additional 5.9 percent of the tasks are within the purview of other sister agencies. The implication is that at the federal level, ODP is the dominant provider of training on all tasks associated with WMD and that it has been accomplishing its mandate appropriately.

- Thirty-two tasks, or **21 percent of all unduplicated tasks, were not accommodated by existing training** and were recommended for inclusion in existing courses or the development of new courses.

- An inspection of the **32 tasks** recommended for course development and **not being accommodated** through existing training suggests that most of these tasks are **complex ones**. These complex tasks generally involve coordination among and between disparate agencies and organizations or the management of activities within the agencies.

In the Global tasks applying to all disciplines, for example, one of the tasks identified as a gap is "Integrate volunteers, community groups, and individual expertise, as appropriate, into the WMD response plan. Indeed, "Coordinate," "Integrate," or "Manage" are the verbs associated with most of the tasks recommended for future development. This observation is important and problematic. These complex tasks, often at the higher levels of the cognitive domain, are the most difficult to teach or train and are almost always assessed through demonstration or exercise. Additionally, the content and scope of the complex tasks are often not evident until a level of practice has been achieved at the lower levels. Additional information gleaned from the more basic programs and curricula can inform and change the structure of the complex tasks. The basic level tasks are predicates for the more complex ones and most of these base tasks have already been developed or are being developed for delivery. The curriculum spiral suggests that this is an orderly progression and a necessary one for the future development of complex tasks, knowledge, skills, or abilities. Prudence would suggest, however, that the development of training to accommodate these tasks proceed immediately, especially considering the importance placed on many of the tasks by the SMEs and the clear need for development of training within a discipline as key to coordination as is EMA.

- Some disciplines represent a greater need for training due to the lack of WMD-specific training within the existing training available in those disciplines. **The disciplines showing the greatest need for WMD training due to the absence of existing training are**:

  Law Enforcement
  Public Safety Communications
  Governmental Administrative

  Each of these disciplines has only about one quarter of the tasks associated with WMD covered through existing training available within the discipline.

- Some disciplines have done an admirable job of incorporating WMD-specific issues and tasks into existing training. Those **disciplines which have high levels of accommodation of WMD-specific tasks in existing training are:**

  Hazardous Materials
  Firefighters

  Each of these disciplines has almost two-thirds of the WMD-specific tasks already addressed within existing training in those disciplines. It is evident that these disciplines have standards of training, performance, and competency which may have helped to encourage the inclusion of such issues and tasks, while monitoring their accomplishment.

- The development of new courses is a difficult and arduous process. **The disciplines of Emergency Management, Governmental Administrative, and Public Works represent those in greatest need of new courses** and the new courses are likely to involve higher levels of complexity, according to the SMEs. About one-third of the tasks requiring new courses in each of these disciplines are in the highest categories of the cognitive domain. These tasks typically require the greatest resources and time in order to assure competency. Most of the other tasks in those disciplines are in the lower categories of the cognitive domain. However, the Global tasks which need new courses are all in the higher levels of the cognitive domain.

CONCLUSIONS

The **first** major conclusion of The ODP Training Strategy, a point of uncertainty at the initiation of the study, is that **the WMD environment is one in which disciplines, tasks, and definitions can be articulated so that courses can flow logically from the competencies desired or needed.** This is no minor issue. Some phenomenon are so amorphous that they must have time to develop to the point that tasks can be identified in "successful" completion. Typically, practice provides the experience necessary for a phenomenon or focus of inquiry to mature to the point that curricular elements are identifiable. The experience with WMD is, fortunately, immature. The maturity of the disciplines associated with WMD, combined with the expertise of the SMEs, however, made the process possible.

A **second** conclusion is that **the strategic planning process used here is the superior process for current and future curricular development for training in a critical, sensitive arena such as WMD that has practical, applied aspects as well as planning and analytical aspects.** The synthesis of a variety of mature disciplines with relatively standardized training regimes with disciplines with little or no standardized training creates unusual problems. ODP is in the difficult position of bridging the territoriality of these disciplines such that if and when they must work together in responding to a WMD threat, they can do so with some sense of unity. This sense of unity can only be developed through the training process. Two common philosophical positions are (1) public service, and (2) strategic planning. Building on both predicates, the curricular development initiative has broad, accepted implications for WMD issues, as well as, other issues, threats, and agencies. This initiative can, therefore, serve as a model for the coalescing of disparate disciplines to achieve a unity of action in a crisis situation. This is perhaps the most important implication to draw from this initiative. The curriculum will change and be refined in the future, the tasks will change as new technologies and new threats become evident, and the disciplines will change as imperatively coordinated associations develop. The process described here will remain largely the same for ODP and any other organization adopting this approach. In fact, it is the strength and continuity of the process which will allow, encourage, and manage change.

A **third** conclusion of major importance is that there is a **clear and present need for the standardization of expectations and performance measures for tasks associated with the response to WMD threats.** That is not to say that standards are absent. They are certainly present, to a greater or lesser degree in the disciplines identified in this process. Some disciplines have firmly and clearly articulated standards for training and performance, based on the objectives for each tier

of practitioner in the discipline. Others have "standards" requiring or mandating a certain amount of training but not consistently specifying the topics, performance measures or competency levels. Others have virtually no specified standards of performance, training, or competency. All of the disciplines lack the requirements for comprehensive training on coordination with other disciplines during crisis situations. The lack of recognized, accepted standards of training for all disciplines as related to WMD threats is a major deficit. Correction of this deficit will require the leadership of ODP, other federal agencies and the cooperation of training partners as well as the disciplines in formulating, testing, implementing, and evaluating hypothetical standards of training which can ultimately be adopted as WMD standards. For those disciplines with established standards of performance and training, this goal will not be considered alien or even problematic. The segue will be almost seamless. Those disciplines relatively young in the development of standards will likely be resistant to such an initiative but the result can, again, serve as a model. What is accomplished for WMD threats can be accomplished for other types of crises, threats, and situations facing these disciplines and requiring that those disciplines clearly articulate standards of training, performance and competence. This implication is not intended to be pejorative or to suggest incompetence, poor performance, or immaturity within the disciplines nor inflammatory to anyone by the use of standard in any legal sense. After recognizing, testing, and validating the differences in tasks from discipline to discipline, a need for uniformity or consistency is evident.

A common theme in The ODP Training Strategy is the need for greater integration and coordination, discipline-to-discipline. This leads to the **fourth** conclusion that **it is critical for ODP to maintain its position of prominence in facilitating the training efforts of each of the disciplines as well as coalescing and coordinating the combined efforts of some or all of them.** For agencies, organizations, and disciplines to come together during a crisis situation and function as one, each with their own expertise and responsibility but coordinated in their accomplishment of the goal of public safety, requires a coordinating force. At the federal level, ODP is that force. The mission is to "build capacity" of the local and state agencies and organizations, in a collegial fashion.

A **fifth** conclusion of this initiative is **that the curricular development for WMD training appears to have progressed in an orderly fashion but can proceed in even more appropriate directions in the future.** That is not to say the assessment is over and the job is done. Quite the contrary. More information on the appropriate direction, tasks, training methods, testing methods, and sites is available now and better courses can be developed, providing more appropriate training for the disciplines. Additionally, many of the tasks are recommended to be combined with existing training in the disciplines, enhancing that existing training and not requiring new courses at the federal level. It is unusual for an organization to accept the notion that it should influence the work of others rather than do the work itself. With the information gleaned from this initiative, ODP should develop those courses needed to accommodate tasks which are not covered by existing training OR to influence disciplines to expand or bridge the existing training to accommodate the tasks.

A major implication associated with this conclusion is that **the training initiatives underway have face validity and are consistent with the general needs of the disciplines representing the audience.** This was not assumed at the outset of The ODP Training Strategy. It became evident that

the process used to develop the initial courses and curricula was consistent with the DACUM (Develop a Curriculum) models described in the literature. It relied on SMEs, experienced administrators, and a keen understanding of risks, threats, and response. This face validity does not invalidate the project, nonetheless, no curriculum is so appropriate that it cannot be refined. The refinement described in this process is so extensive, it is likely to be the most appropriate, most examined, and most validated set of tasks developed in such a short period of time. Over many years, some disciplines have refined the tasks and courses successfully, as is the case with Fire. The process described here is one that occurred actively in only one year yet it has the rigor seldom seen in similar processes lasting far longer.

Notes to the Executive Summary

1. The type of WMD incident is a critical factor. A WMD incident could involve a highly toxic chemical, or biological agent, or a radiological isotope, such as sarin, anthrax, or cobalt-60, respectively. These materials could be disseminated through an improvised explosive device in addition to other, secondary dispersal devices designed to harm the public in general and responders arriving at the scene.

The emergency responder community is a large one - involving emergency managers, emergency medical services, firefighters, hazardous materials (HazMat) personnel, law enforcement, public health personnel, public works personnel and potentially many other officials. Consequently, the matter of who should respond to a WMD incident has become an important, but not a simple issue joined by the issue of who among the emergency responders should command and control, the scene when numerous responders are present.

The different phases of WMD incidents involve another challenge: Whether the incident is the pre-incident, the crisis response and management, or the recovery and consequence management stage, has a major impact on all other dimensions of preparation and response.

The numerous jurisdictions of the United States present a wide and dynamic range of risk and threat factors relative to WMD incidents and thereby introduce the dimension of where to prepare for WMD response and the related matter of preparedness priority.

An overriding, if not final, dimension of WMD preparedness relates to what is intended to be achieved in preparedness efforts. Is the goal of these efforts awareness, deterrence, prevention, detection, effective response and management, crime scene management, full recovery and consequence management or some combination of each? Goal choice has perhaps the most controlling impact on preparedness and its actual substance. Each of these dimensions of a WMD incident has a great singular importance, but the ultimate challenge is to integrate all of these dimensions so that they are fully understood and coordinated and so that they function effectively in practical exercises and actual incidents.

ODP’s training program is its dominant effort toward realizing its mission. However, the terms "training" and "exercise" are often used interchangeably. And, in fact, exercise is generally viewed as the "highest" form of training. ODP operates both a training program and an exercise program. The special attention directed to exercises as a form of training by the organization is consistent with the findings of the Training Strategy of ODP. To wit, exercise is the method of training most capable of maximizing preparedness for response to a WMD incident.

2. We are reluctant to include the 63 Public Health and Health Care tasks in these data because they were not subjected to the full range of SME assessment in The ODP Training Strategy, particularly the last SME meeting in March, 2001 and subsequent ODP assessments. The Public Health tasks, along with those of Health Care were included in the SME survey conducted in late 2000. While these tasks are not reflected in the findings in this section, they represent important components in the coordinated response to WMD incidents and are likely to be further explored through the

continuing work of sister agencies such as those listed below. Midway through the ODP Training Strategy process, it was determined that, to reduce duplication of effort, those other agencies would move forward on Public Health and Health Care tasks and issues. The summary findings for these disciplines are presented here only to serve as benchmarks for these other efforts.

> There were 36 tasks identified early in the process as WMD-specific in the field of Public Health. The average criticality, according to the SME questionnaires, was 4.11 and the degree to which the tasks are accommodated by existing training in that discipline was 17.07%. The most evident gaps in existing training were associated with the development of plans for mass fatality management, mass medication and immunizations, and epidemiological coordination, all rated very high in criticality and very low in current implementation. Several of the most critical tasks involved coordination with EMA. Similarly, some of the most critical of the 27 tasks in Health Care involved coordination with EMA and the development of plans for mass medication and immunization. The average criticality level of Health Care tasks was 4.28 and, on the average, the rate of accommodation through existing training was 30.57%. Key findings associated with Public Health and Health Care, based on this inchoate assessment, focus on the pressing and unmet need for training in the development of coordination and collaboration plans between Public Health, Health Care, and EMA, particularly for mass medication and immunization, as well as plans to clarify epidemiological responsibilities within the disciplines.

Work for determining WMD training content for public health and health care professionals was conducted separately by the United States Department of Health and Human Services (DHHS), Office of Emergency Preparedness (OEP) via contract with the American College of Emergency Physicians (ACEP) to develop the strategies required to prepare emergency medical personnel- specifically emergency medical service providers, emergency physicians, and emergency nurses- to respond to WMD incidents. This work relied on a task force of Subject Matter Experts (SMEs.) The entirety of the work is contained in ACEP's Task Force of Health Care and Emergency Service Professionals on Preparedness for Nuclear, Biological, and Chemical (NBC) Incidents, FINAL REPORT on Developing Objectives, Content, and Competencies for the Training of Emergency Medical Technicians (EMT), Emergency Physicians, and Emergency Nurses to Care for Casualties Resulting From NBC Incidents, Contract No. 282-98-0037.

3. For example:
The degree of agreement among the SMEs for each discipline was remarkable. This agreement was measured using Kendall's W (Coefficient of Concordance) statistic and the lowest degree of agreement within the disciplines was .754 (Governmental Administration) and the highest was .94 (Public Works) showing almost perfect agreement. Even for the Global tasks, the coefficient of concordance for the 18 respondents was .892. These unusually high levels of agreement (1.0 would indicate perfect agreement and 0.0 shows perfect disagreement) validate the results since there is little variance in the responses across SMEs.

Key findings from the survey addressed the issues of criticality of the tasks (the exact question was "Indicate, on the scale below, the level of 'criticality' you associate with someone in your discipline being able to perform this task - How important is the task?" with a scale from Not Important (1.0)

to Essential (5.0)) and the degree to which the tasks are accommodated through existing training (the exact question was "Select the likelihood that the knowledge, skill, or ability associated with the task is already a part of the training received by most professionals in this discipline." with the range from Not Part of Any Existing Training (0%) to Already Part of All Training (100%)). Additional items from the questionnaire were selected and assessed for this summary. On average, the Emergency Management Agency tasks and the Hazardous Materials responder tasks were viewed as having the highest levels of criticality, although there was no effort to compare tasks across disciplines. The tasks listed within the Fire discipline and those under HazMat showed high levels of accommodation within existing agency and discipline-specific training (59.8 percent and 68.7 percent) suggesting that those disciplines have already addressed most of the key issues related to WMD through existing training. At the other extreme were the disciplines of Governmental Administration (22.4 percent of the tasks were accommodated through most existing training), Public Safety Communications (22.5 percent of the tasks were accommodated through most existing training), and Law Enforcement (26.7 percent of the tasks were accommodated through most existing training).

For all 235 tasks, the average criticality level, on a scale of 1 (Not Important) to 5 (Essential) was 4.2316. For all 235 tasks, the likelihood that the task is already part of the training received by most professionals in the discipline surveyed was 36.9833 percent.

4. Appendix 1 of The ODP Training Strategy includes detailed results of many aspects of the analysis, including the level of training and the method of delivery. The vast majority of the responses (98.6 percent) placed the task in the cognitive domain and 68.5 percent were placed in the lower half of that domain, in the categories: percent) placed the task in the cognitive domain and 68.5 percent were placed in the lower half of that domain, in the categories:

Knowledge	identify, specify, state
Comprehension	explain, restate, translate
Application	apply, solve, use

The preferred location of the training was "on-site" in the agency, described as "This traditional method could be offered at agency-specific locations, jurisdiction-specific locations, or regionally. Traditional methods are most appropriate for many clientele but time and travel restrictions may limit the audience."For some tasks, however, computer-based instruction (described as "This method may incorporate Internet instruction with the now established computer-based models for delivery of instruction to different audiences. This approach offers the most flexibility for the clientele but may compromise interaction, demonstration, and feedback.") was viewed as a viable alternative to traditional face-to-face instruction ("For some of the most complex tasks or tasks requiring particular equipment, centralized instruction was selected as the best option Some training courses are best offered in central locations. The reasons for transporting participants to central or regional locations can include issues such as models, rare equipment, instructional continuity, and the like.") It was not uncommon for the SMEs to designate two options as acceptable (generally On-site and Centralized were the options selected most frequently).

5. In the SME survey, "Projects and Exercises" was the method selected most frequently for providing the training, as well as testing or evaluating competence and performance for the tasks. Small group exercises were selected twice as frequently as large group or multi-agency exercises but those two categories represented the most often selected evaluation methods. Consistent with the literature, those tasks in the lowest levels of the cognitive domain were selected for written tests and those selected for computer-based instruction were often selected for self-assessment.

Part I. Prominent Approaches to the Development, Delivery and Revision of Training Programs

The initial task for The Training Strategy for ODP was a thorough examination and documentation of prominent approaches to the development, delivery and revision of training programs. It was clear that no topic-specific models were available to direct the curricular processes related to response to incidents involving Weapons of Mass Destruction. The starting point, therefore, was the existing literature addressing teaching and training professionals in activities somewhat consistent with those of a WMD incident. The work for this task is fully documented in Part I, Prominent Approaches to the Development, Delivery and Revision of Training Programs, which provided the strategy with an understanding of six items critical to all learning endeavors.

Part I frames the discussion of WMD training by considering the following:

- different ways that people are able to learn and disseminate information and knowledge;
- different ways to identify what should be learned and different approaches to how it could be learned;
- different ways to teach and deliver training courses;
- different ways curricula can be constructed;
- different ways to construct and integrate courses; and
- different ways to evaluate and test the learning of individuals and of groups.

Most succinctly put, the information contained in Part I educates ODP regarding the existence of numerous approaches to learning and the relationship of those approaches to success in fulfilling the ODP mission.

Chapter 1
Introduction: Planning and Implementing a Curriculum in a Specialized Discipline

Chapter 1 Outline

Introduction: Planning and Implementing a Curriculum in a Specialized Discipline

Elements of Strategic Planning

Advantages of Adopting a Planning Approach

Overview of this Document

The development of a training program in a specialized discipline is a process which is similar to and informed by "strategic planning." Virtually every serious and comprehensive contribution to the literature on curricular development and design includes a section on strategic planning. Similarly, every comprehensive discussion on the justice-related discipline addresses the issue of strategic planning. It would be inappropriate to ignore this planning concept here.

Elements of Strategic Planning

Experts on strategic planning have identified a variety of steps in the process. Some of the literature catalogues a complex array of steps in the planning process while some have only a few, critical steps.

Strategic planning in education has been addressed often and by some very qualified experts. It would be duplicative to catalogue many of the approaches, which tend to differ slightly but in non-substantive ways so only a few approaches will be described. These approaches have utility later as we describe the processes which can be and should be used in developing a "training architecture" or structure.

We will first view what Bryson and Einsweiler [1] call the basic steps in public sector strategic planning. These are the logical steps an organization, particularly a public organization should take in developing strategic plans. These steps are:

- Scan the environment
- Select key issues
- Set mission statements or broad goals
- Undertake external or internal analyses
- Develop goals, objectives and strategies for each issue
- Develop an implementation plan to carry out strategic actions
- Monitor, update and scan

These or similar steps in a strategic planning process can assist an organization in clarifying directions, establishing priorities, and make defensible decisions, across levels and functions.[2]

McCune[3] describes a curricular planning process which includes but is not limited to strategic planning. She uses strategic planning to address the question "Where are we going?" and includes in this element (1) the strategic plan, (2) the mission statement, (3) the goals, and (4) the decision points. The next element in the planning process described by McCune is program planning. She uses this term to describe the answer to the question "How do we get there?" and includes (1) a curriculum plan, (2) a personnel development plan, (3) a facilities plan, and (4) a budget. The final element she describes is the program delivery plan which answers the question "What do we do to get there?" and includes (1) lesson plans, and (2) work plans. McCune's planning process addresses broadly the issues of relevance (strategic planning), effectiveness (program planning), and efficiency (program delivery).

Finch and Crunkilton describe a strategic planning process which is more specific than McCune's. They define strategic planning as a process or series of steps that guide the organization through:

- Examining the external environment and its impact on the organization now and in the future.
- Conducting a self examination.
- Formulating vision and mission statements to guide the organization in the future.
- Developing specific plans that will assist the organization to fulfill its vision and mission.
- Applying the strategies included in the plan.
- Evaluating the organization through formative and summative assessment approaches.[4]

Clearly they emphasize the introspective examination of the organization or unit to determine the appropriateness of the actions. They give little insight, however, on the process of developing the specific plans (step 4) which are to be used. This is the information the organization or agency is most interested in seeing articulated because it represents the blueprint or "road map" which, if followed, is likely to accomplish the objectives. Their steps provide information on the general objectives and outcomes of the steps but we can turn to justice-related literature to find more specificity in the steps or elements.

One of the most comprehensive and specific treatments of planning was contributed by Victor Strecher.[5] Following years of planning and delivering police training and decades of planning and directing some of the most prestigious criminal justice educational programs in the nation, Strecher published a treatise on Planning Community Policing. Designed most likely as a text, the book has been used by many police administrators in directing systematic and strategic change within organizations.

Under the heading "Goal-Oriented Change," Strecher describes sixteen steps or elements in the system planning model. These steps are consistent with the strategic planning process but provide specificity within some of the categories. The steps or elements are:

Define the problem
Define the service goal
Analyze the service goal
Accept, refine or reject the service goal
Commit the agency to the goal - policy, dimension of response
Compile an array of strategy alternatives

Analyze the costs of strategy alternatives
Select the strategy
Convert the strategy to an action plan
Divide the work of the action plan
Assign the task to units
Implement the action plan
Monitor the operation
Feed back the monitoring information
Refine any stage in the retro-plan
Manage the system toward its goal and productivity

Each of these sixteen steps or elements requires a great deal of work and each could easily be divided into many more elements or steps. Most organizations begin by compiling "an array of strategic alternatives" but, as Strecher advises, there are issues related to problem identification and service goal development prior to determining which strategies apply.

Advantages of Adopting a Planning Approach

To implement a plan without first developing a plan is illogical. Similarly, to implement a curriculum without planning and developing that curriculum or training process is ill-advised and illogical. What most organizations seek is a process which adopts the goals, however they are produced, and achieves the goals of the organization. Boiled down to one element, the organizational goals should be achieved. In the training environment, the objective is to implement and instruct the appropriate curriculum to prepare people to resolve or address certain issues and problems.

Overview of this Document

This document includes a theoretical platform or predicate, Part I, and a more focused, condensed process for curriculum development, consistent with the predicate. The articulation of the theoretical foundation is broadly based in order to accommodate changes in the future as well as provide guidance and suggestions for further development of curricula. The more focused "process" portion of this document, Part II, is intended to provide guidance in the development of a training curriculum in a specialized discipline. It does not include all of the foundational information and materials used to develop academic "degree-granting" disciplines, although that may be useful for future initiatives.

In the composite, this document is a strategy for curriculum development. The strategy is not intended to meet a specific quantifiable goal, although it is constructed so that it may be adjusted to do so. It is, in that sense, a generic strategy that should work on any scale and in any environment. A companion to Parts I and II is the Executive Summary which introduces the document and provides answers to key questions associated with training in the WMD environment. The processes used to glean those answers were consistent with Parts I and II which reinforces the utility of the portions as "predicates" for the continued understanding of the best, most appropriate curricular approaches for WMD.

Part I of the strategy is comprised of the Introduction and five other sections: (1) Contemporary Approaches to Curricular Development, (2) Assessment of Training Needs to Determine Curricular Content; (3) Curriculum Development and Revision; (4) Training Delivery Methods; and (5) Quality Control Measures.

The section on contemporary approaches to the design and development of a curriculum, describes broad, overarching issues associated with envisioning and perfecting a curriculum, with examples to show that it is not a fast process but one which includes formation and revision over time. These examples include both education and training curricula, based on literature in the disciplines exemplified. The Needs Assessment section addresses the process for determination of need for training and education and focused indications of the content of that curriculum. The curriculum development and revision section addresses the process for developing and revising courses for which there is a determined need, with particular attention to the educational objectives. If the educational objectives are properly constructed, and based on good educational theory, the curriculum should be sound. For that reason, a great deal of attention is given to the prominent taxonomies of educational objectives. These objectives become common themes in this and other sections of the document. The training delivery section addresses the process for determining the delivery method(s) to be employed for each course developed, based on the educational objectives and other criteria. The quality control section addresses competencies, course monitoring and evaluations and the maintenance of a comprehensive feedback loop.

We are of the opinion that this document has utility and its utility will increase over time. A curriculum developed on a sound foundation, a predicate based on good theories and valid educational philosophies, will have sufficient value so as to endure as long as the need for the specific education exist. The curriculum will change, as will the approaches used to develop it and the inherent courses, as has been the case with every other curriculum. No effort has been made here to justify an approach or even to specify any one approach to curricular development. The emphasis, instead, is to develop an appropriate, defensible process with options which can be adopted and tailored by subject-matter experts to develop and refine courses and curricula to meet ever-changing needs.

Notes to Chapter One

1. Bryson, J.M. and R.C. Einsweiler. (1991) Shared Power. Lanham, MD: University Press of America; and Bryson, J.M. (1988). Strategic Planning for Public and Nonprofit Organizations. San Francisco: Jossey-Bass.

2. Steiner, George A. (1979). Strategic Planning. New York: Free Press.

3. McCune, Shirley D. (1986). Guide to Strategic Planning for Educators. Alexandria, VA: Association for Supervision and Curricular Development.

4. Finch, Curtis R. and John R. Crunkilton. (1999). Curriculum Development in vocational and Technical Education: Planning, Content, and Implementation. Boston: Allyn Bacon. P. 46.

5. Strecher, Victor G. (1997). Planning Community Policing: Goal Specific Cases and Exercises. Prospect Heights: Waveland, p. 26-30.

Chapter 2
Contemporary Approaches for Curricular Development

Chapter 2 Outline

Contemporary Approaches for Curriculum Development

- *Introduction*
- *Systems Approach*
- *Competency Based Approach*
- *Performance Based Approach*
- *Process of Curricular Program Development*
  - *Germinal Approach to Curriculum Development*
    - *Rational Process*
    - *Assessment Process*
  - *The Development of a Discipline: Case Study*
    - *Technical v. Academic*
    - *Training Model*
    - *Academic Model*
    - *Social Science Model*
- *Summary*

Introduction

Often curricula are developed or designed in a philosophical void. There are no prevailing ideologies to guide the curriculum managers or those responsible for oversight of the process. It is possible to develop a curriculum which is useful and wholesome without such guiding principles, but it is far more likely that the curriculum and curricular processes will succeed if there are overarching philosophies. Three such design philosophies are described in this chapter. While it may seem that this process is the entire "curricular development" process, it is really an incremental process of identifying and articulating the key elements, driving forces, rationale, and philosophies at each stage but with the first strategies being the most important. If a curriculum is begun incorrectly, it will be flawed throughout. If it is begun correctly, flaws may develop but they are less likely to be fatal.

Systems Approach

Finch and Crunkilton define a system as "a collection of elements, interacting with each other to achieve a common goal."[1] Later we will talk about "Individualized Instruction" as a system revolving around the student. Here, however, we are describing the process which results in the development of the curriculum.

Perhaps one of the most well-known and widely used curriculum-development models which approximates a systems approach is that described by Tyler.[2] In suggesting the foci for the determination of educational or curricular objectives, Tyler suggested that the curricular developers look to three sources of information and insight:

Student	First, though not exclusively, curricular planners should look to the student and student needs to help determine the range of topics and material to be addressed in a curriculum. The range of needs includes social, psychological, physical, recreational, occupational, and educational. In essence, the students' needs and abilities are screened to determine the type of courses and curriculum needed.
Society	Tyler advised that the environment in which the students must thrive should have a role to play in the development of a curriculum. "Society" was used as a proxy for health, family, vocation, religion, civic issues, and community. For our purposes, agencies, organizations, communities, states, and other entities outside the learner or participant but exerting a strong influence on him or her would be the critical variable in this stage of planning.[3]
Subject Matter	The subject matter exerts a strong influence on the curriculum, even in the planning stage. Tyler comments on the value of "subject matter experts" in the development of new courses and new curriculum but he infers that they are also keeping the other two elements - students and society - in mind as they recommend and refine new courses of study.

Tyler then recommended that curriculum planners "screen" the objectives which rise from the consideration of students, society and subject. The "screen" he suggested was both a philosophical screen and a psychological screen.[4] The philosophical screen assists in determining the values inherent in the educational and social philosophy of the curriculum. The psychological screen considers the theory of learning and the level of change sought in the learner (later we will describe the Taxonomy of Learning Objectives which roughly approximates this screening process) which must be considered in the developing the curriculum.

According to Tyler, once the sources for the course and curricular needs have been screened, the curricular planner can then develop precise instructional objectives. Tyler's model represents an elementary "system" of developing curricula in that it conforms to the definition of a "system" as described above and includes several independent components - students, society, subjects - in the evolutionary process of development. It is not a very elaborate model but it does generally describe the systems approach. A much more elaborate and appropriate model is the one developed by Oliva.[5]

This model has some of the same attributes as the Tyler model and he gives credit to Tyler and others for informing the process he used to develop this system of curricular development. Oliva's model has seventeen steps in the process or system. He represents the model in a schematic which is rather complex and we will describe it here in steps rather than reproducing all of the interactional components.[6]

Step 1	Specification of needs of students in general
Step 2	Specification of needs of society

Step 3	Statement of aims and philosophy of education
Step 4	Specify the needs of students (or participants)
Step 5	Specify the needs of the particular community (or organizations and agencies)
Step 6	Specify the needs dictated by the subject matter
Step 7	Specify the curricular goals of the school (or overarching organization)
Step 8	Specify the curricular objectives
Step 9	Organize and implement the curriculum
Step 10	Specify instructional goals
Step 11	Specify instructional objectives
Step 12	Select instructional strategies
Step 13	Begin selection of evaluation techniques
Step 14	Implement instructional strategies
Step 15	Make final selection of evaluation techniques
Step 16	Evaluate instruction and modify instructional components
Step 17	Evaluate the curriculum and modify curricular components

These seventeen steps, labeled briefly above, are laden with implications, decisions, work, and information. Stated briefly and succinctly, they represent a system in flow and process. Each step in the system or process requires significant scrutiny if the curriculum is to succeed. Our purpose here is to describe the process as an approach which can be used to develop a curriculum. While this description is not sufficient to operationalize the process, it is important in gaining a broader understanding of the complexity, flow, and decisions inherent in the system or process.

There are several subcategories of Oliva's model which are useful in our preliminary discussion. He identifies steps as "planning phases" and "operational phases." Steps 1 through 8 are planning steps while step 9 is both a planning and operational step. Steps 10 through 13 are planning steps, Step 14 is an operational step, Step 15 is a planning step, and Steps 16 and 17 are operational steps.

He further differentiates between curricular steps and instructional steps in the process or system. Each has a planning and operational component as well. It is important to separate the curricular design process from the instructional delivery process but it is also important to maintain a linkage

between the two in the development and the revision phases. Olivia links each of the seventeen steps in his process in a linear fashion but he also has a feedback loop from the final step, "Evaluation of Curriculum" to step 11, "Specification of Instructional Objectives." Thus the implementation phases feed back into the planing phases so that future iterations of implementation of courses and curricula can be informed by the observations and evaluations.

Olivia's model is useful as a systems orientation establishing a flow of actions, both planning and implementation, from the earliest to the latest and back into the planning process. His discussion of the model, however, loses its utility for our purposes when we go beyond the process or the system he suggested. He describes one of the early steps, for example, the philosophy of education, as fitting into one of the various types or groups accepted for traditional educational organizations:[7]

Reconstructionism	Education (schools) achieve improvements in society by becoming an active agent of change in addressing cultural and social change.
Perennialism	The real purpose or philosophy inherent in education is the educational process and the everlasting effects of learning. Conversely, the immediate effects are inconsequential.
Essentialism	Educational philosophy is comprised of two major components: cognitive and behavioral. While both are focused on preserving the essential values of the society, the cognitive components maintain the intellectual disciplines which have served society so well since the days of Aristotle. The behavioral components or principles "casts the learner in a passive role as the recipient of the many stimuli to which he or she must respond."[8]
Progressivism	An approach which emphases the active learning of the individual, rather than the passive learning, but individualizes the learning process to meet the needs and attributes of each learner. It is consistent with individualized learning programs and informal classrooms, experimental psychology, an emphasis on the gestalt, and a shoring up of the self-esteem of the learner.

Clearly, each of these philosophies or approaches has viability and credibility in the broad educational process. We are interested in a narrower, more urgent focus here, training initiatives for a particular area of concern, and a different type of learner than those who are accommodated in K-12, baccalaureate, and post-baccalaureate education. Ours is more consistent with professional education. It is still important, however, that a philosophy be articulated for a training initiative or training program.

Finch and Crunkilton[9] point out that "philosophy can and often does serve as a foundation for curriculum content" and that fact should not be ignored. It is an important step in the systems approach to developing and designing a curriculum.

For a training program to be successful, it must have a philosophical basis. This can be operationalized as any of the following:

Belief Statement:	A statement of purpose or goals of the initiative, agency, organization overseeing the training or developing the curriculum.[10]
Aims and Rationale	"A clear set of statements which succinctly encapsulate the objectives of the course or programme".[11]
Goals and Objectives:	Helps "direct the choice of curricular content and the assignment of relative priorities to various components of the curriculum" and they "suggest what learning methods will be most effective."[12]

It is the last of these operationalized versions of "philosophy" which comes closest to our purposes. That descriptions of the "goals and objectives" of a program of study is consistent with medical education and training. It is not important to spend time differentiating between goals and objectives because the difference is typically one with little distinction. Goals and objectives represent the "end toward which an effort is directed."[13] It is the purpose of the initiative or it can be seen as the mission of the program.

Once we have identified the philosophy, purpose, goals and objectives, or whatever other terms we might use for the "end" toward which the training initiative is directed, the other steps in the systems approach become clearer.

Interestingly, the philosophy or purpose actually helps to set limits or boundaries of the definitions of the "needs of students" and the "needs of society" in Olivia's systems process. If the training programs needs and the participant's needs are not as broadly defined as the typical elementary/secondary/post-secondary educational enterprise, it will be apparent when the initiative develops its statement of purpose or philosophy.

The steps which follow the development of the goals and objectives, according to Olivia, are consistent with "needs assessment," "curriculum development," "training delivery," and "evaluation, quality control, or assessment." These are the steps we have adopted in this document and steps which we feel are appropriate for a systems process of curricular development.

The systems model which has been called an "Integrated System for Workforce Curricula"[14] is consistent with our purposes and does not preclude the use of two other approaches discussed later in this chapter. According to the Integrated Systems model, there are three general content groups:

Core of basic Knowledge, skills, and abilities;

Broad technical knowledge, skills, and abilities; and

Specialized technical knowledge, skills, and abilities.

In addition to describing the integrated systems approach, which is consistent with the "spiral" approach discussed later, the authors suggest that "school-site" learning can apply to the core and general or "broad technical" areas but as one moves into more specialized knowledge, skills, and abilities, it becomes more important to have "work-site" learning opportunities.

Two other "systems" approaches which are important to describe are actually types of "outcome-based" models. These two, performance-based and competency-based, are important is defining the outcome expected or desired as a result of the educational or training process.

Performance Based Instructional Approach

An important and enduring approach was articulated by Pucel[15] when he described Performance-based Instructional Design. This approach is not inconsistent with that of the "systems approach" described above. It simply provides a different framework upon which to base the training or education. While performance-based education is discussed in the section on curriculum development, it is important here to point out that it may serve as a "systems approach" which is useful in a training environment.

Pucel has seven steps in his system or process of performance-based instruction:

Program Description	The content or purpose of the program of study. May include contextual information regarding the environment of the learner or the issues to be addressed in the education.
Content Analysis	The identification of knowledge, skills, activities, attitudes, functions and process which form the possible topics or areas of instruction/curriculum.
Content Selection	Prioritizing the knowledge, skills, abilities, attitudes, functions and processes which are most important and which must/should/could be a part of the initiative.
Content Sequencing	Ordering the elements of the instruction/curriculum in a logical fashion, taking care to recognize relationships between and among the elements, and organized in a fashion from least complex to most complex.
Lesson Structuring	Developing behavioral objectives, and learning objectives, for each course, element, module or group. Within each element, developing a "lesson flow" based on the objective, information, demonstrations, practice, and evaluation.
Lesson Delivery Format	Determining the most appropriate method for delivering the information or lesson in the traditional format, modularized format, programed instruction, or computer-assisted instruction.

Evaluation Procedures	Assessing the performance based on the knowledge, skills, and abilities which were intended to be enhanced or developed through the instruction. Performance is the product and the thing to be enhanced or developed so it is the thing to be assessed to determine the adequacy and appropriateness of the instruction and curriculum.

These steps are not sequential ones but rather are integrated ones. Content analysis includes content assessment and sequencing prior to the development of the lessons, lectures or courses, which is the product of the "content analysis" step. Similarly, "lesson delivery formatting" is actually an intermediate step in the whole process of "lesson structuring" and evaluation feeds back into lesson structuring.

A key value of this approach is the determination of the knowledge, skills, and abilities which are to be affected or effected. The *performance* of those abilities becomes the objective, the curricular elements, and the evaluation components of the curriculum. Performance-based instruction is an intuitive but valuable description which is even more valuable in a training environment.

Performance-based instruction is especially useful for activities (knowledge, skills, and abilities) which are to be group endeavors. A group or team can perform tasks and accommodate needs which can be assessed objectively based on the accomplishments and performance. The next type of approach described, competency-based instruction, is applicable to individual efforts but more difficult to apply to groups or teams.

Competency-based Instructional Model

McGaghie, et al.[16] describe medical education as traditionally and primarily "subject-centered." This type of instruction is typically didactic and consumes all of the undergraduate educational experience of physicians as well as two to four years of basic and preclinical science. "All students study the same material, in the same setting, within the same time-frame." Often the ensuing clinical instruction is handled in a similar though less formal fashion.

Competency-based instruction is different from traditional instruction in several ways:

> First, such a curriculum is organized around functions required in the practice of the discipline or topic being taught;
>
> Second, it is grounded in the supposition that the students invited and allowed to attend the instruction are of such quality that they are capable of mastering the performance objectives; and,
>
> Third, the processes of learning and displaying mastery, as well as the process of teaching, are both able to be assessed and evaluated.

If an educational or instructional focus meets these three criteria, it may be taught in a competency-

based format. "Mastery learning," of which competency-based instruction is synonymous, "means that, given adequate preparation, unambiguous learning goals, sufficient learning resources, and a flexible time schedule, students can with rare exceptions achieve the defined competencies at high levels of proficiency."[17]

Clearly, competency-based instruction requires the prior identification of the elements of competence or mastery of a subject or activity. This identification can occur through self-reports, observations, or task analyses. The critical elements and the sequencing of the elements can be based on critical incidents or expert opinions. Whatever the approach, a performance model is necessary in order to judge the process which forms the "context" in which the activity occurs. "The argument has now been fully developed that professional performance does not occur within a vacuum" but takes place in the context of activities and environs. Proficient professional performance can be described as a flow or process. Once this has been done, the instructional components are apparent. Teaching, tutoring, or making recognizable the process or flow and the steps in the process, allows the teaching or training of a professional so that they can competently perform a task, whether it be examination, surgery, or diagnosis.

Competency-based instruction is a process or system but the steps vary from discipline to discipline. The process can best be determined using the techniques mentioned, such as observation or expert opinions.

Process of Curricular Program Development

In a seldom-cited but quite insightful book,[18] Jerome Bruner proposed that the educational process conforms to a "spiral curriculum" which moves from general to specific in a very organized fashion. He later described the basis for his thoughts:

I was struck by the fact that successful efforts to teach highly structured bodies of knowledge like mathematics, physical sciences, and even the field of history often took the form of a metaphoric spiral in which at some simple level a set of ideas or operations were introduced in a rather intuitive way and, once mastered in that spirit, were then revisited and reconstructed in a more formal and operational way, then being connected with other knowledge, the mastery at this stage then being carried one step higher to a new level of formal or operational rigor and to a broader level of abstraction and comprehensiveness. The end state of this process was eventual mastery of the [connectivity] and structure of a large body of knowledge.[19]

In spite of constructing a very long and complex sentence, Bruner effectively described the development of cognition within a discipline or, arguably, a technical skill or ability. We can see this "spiral curriculum" process reflected in almost any K through 12 curriculum in the nation. That is not to say that Bruner was responsible for the sequencing or continuity, only that he described it succinctly and graphically. Bruner's description of the continuity of curriculum development is useful here as well. It provides us with a description and depiction of a process which addresses generality, complexity and abstractness.

Dowling[20] adopts the "spiral curriculum" approach to curricular development for technical training.

In doing so, he augments Bruner's description with the conceptual framework of Reigeluth and Stein's "Elaboration Theory of Instruction" published in 1983. This theory includes two key elements used by Dowling:

- courses should be organized in a simple-to-complex, general-to-detailed, abstract-to-concrete manner; and,

- in order for a student to progress from one level to another more complex level, certain requisite skills must first be mastered.[21]

Both the Spiral Curriculum and the Elaboration Theory are rather intuitive and easy to recognize. They do, however, provide us with a framework which can be used to construct instruction in a complex field of training.

Dowling describes curriculum design as the process of "selecting the scope and sequence of the technical content covered by a curriculum." Similarly, "instructional design is concerned primarily with selecting optimal methods of instruction to bring about the desired changes in student knowledge and skills, as delineated by the learning objectives."[22] We will address the issues of learning objectives and competencies later but the process described by Dowling allows us to envision and conceptualize a holistic approach to training. In his model, it is critical that the linkages and progressiveness of the curriculum and courses be recognized and articulated to the participants. Dowling states:

> One concern during the teaching of complex job-oriented tasks is to control the flow of information to the students so they do not become overwhelmed with too much information to quickly. ... students are taught not only factual information, but are provided advanced organizers in the form of linkages and interrelationships between pieces of information. This elaborate association helps create a network (schema) between the pieces of information, which, in turn, facilitates the use of higher-order thinking skills by the student.[23]

The Curriculum Spiral aids in the development of courses, development of a curriculum, scheduling of courses, and evaluation of mastery of skills. Each of these elements are useful in the processes described in this document.

Germinal Approaches to Curriculum Development

Often at the initial stages of a discipline or an initiative, there is insufficient information or a "body of knowledge" to serve as the predicate for a polished approach to curriculum development. This has been true in the development of all disciplines or perspectives.

Work-related training or "education for work" [24] has existed for at least the last 4000 years. Apprenticeships have been the primary method of instructing in professions and trades. Apprentices to scribes in Egypt had a bifurcated field of study where they first learned to read and write then, through apprenticeships, worked with experienced scribes to complete their education. Apprenticeships were expensive, labor-intensive methods of training others. The industrial

revolution of the early 1800s made it necessary to abandon the apprenticeships for many jobs since the greater need was for unskilled labor. The contrast between the highly trained apprentices and the untrained workers was evident and there was a growing need for some other methods for training larger numbers of people to perform tasks, and train them inexpensively.

In the United States, the Smith-Hughes Act of 1917 firmly established technical and vocational training, but without much insight on the developmental approaches or methods which were appropriate. Similarly, the Perkins Vocational and Applied Technology Education Act of 1990 was established to recognize and remedy the degree to which the U.S. was lagging other countries in the development of skills to meet the technological revolution which was gaining momentum. This legislation and the subsequent 1994 School-to-Work Opportunities Act established delivery systems but only implied the methods to be used to develop curricula.

Curriculum, as described here, is the interrelated instruction and directed experiences surrounding knowledge, skill or ability in a particular field of study or performance. Instruction is the organized interaction between experienced teachers and learners for the purpose of improving knowledge, skills and abilities in a particular field of study or performance. The interaction need not be face-to-face.

Much of the literature makes the distinction between training and education. While that distinction often invites invidious comments from both camps, the purpose here is to show the development of knowledge, skills, and abilities in sometimes technical and specialized fields of study, sometimes general and non-technical topics. Whether that is labeled "education" or "training" would not affect the outcome. Generally we will refer to the approach to be used and the curriculum to be developed as "training" since it relatively focused and not designed to augment or supplement traditional undergraduate or graduate degrees, but concrete examples of the differences are presented below.

The literature is firm in the notion that training curricula can be developed using any of several approaches. It can be developed in the *abstract* or it can be developed based on an assessment *current knowledge* including projections of *current and future needs.* Abstract development is the least reliable and valid of the approaches. It may be the necessary approach if curricula must be developed in an entirely new area of inquiry, devoid of instructional history and information. To use this approach when information is available but not being utilized or considered is irresponsible curriculum planning. It would be somewhat arrogant for any organization to assert that it knows what training is needed and for whom, without regard for the needs, gaps and capacities of the persons and agencies receiving the training. We believe that such an approach would be recognized by the recipient as indefensible, therefore shunned or certainly not embraced.

The assessment of current knowledge, current needs, and future needs represents the appropriate predicate for a viable training initiative. This assessment is essential for the development of a valid curriculum on any subject. Having delineated the elements to be considered, there are two general approaches that can be used in the actual design of the training curricula:

Rational Process. If there is insufficient time or insufficient information on which to proceed but it is essential to proceed quickly, a rational approach, informed by

experts, often referred to as "Subject-Matter Experts," on the subject, may be the most viable method to use. This method, however, should be restricted to the initial approaches and not the revision and continued development of the curricula. If the experts on the subject are sufficiently knowledgeable, representative, unbiased, and articulate, the initial curricula should be appropriate and valid. This method is an established one in the development of curricula in training and education. It relies upon the strength of those experts who recommend and design the elements, based on their intuitive and experiential views of needs and gaps.

Seldom is it advisable to adopt and continue an informal approach, described as the "Rational Approach" above, for a long period of time. It is inconceivable that a discipline of study and instruction would be sophisticated enough to continue to exist yet be simple enough for a small group of experts to understand and fathom all of the intricacies which might exist or develop for all of the groups requiring instruction. An "Assessment Process" should be considered as the field of study is making the transition to a fully developed stage.

Assessment Process. The assessment of needs and gaps may be completed formally, using proper methodology, which can serve as the most defensible method of designing any curricula, or it can be conducted informally. While both methods will be described more fully in the "Assessment" chapter of this document, it is important to note here that the informal method is a reliable and valid method to use in the developmental or transitional phases of a curriculum or program of study. What is suggested ultimately is a general assessment, based on the sound, reliable, valid methodology such as that used in a sophisticated task analysis. Typically, the clientele or "end-users" are asked to respond to structured (sometimes unstructured but focused) questions regarding their activities, needs, frequency of occurrence, and gaps in knowledge, skills, and abilities. The curricula, if based on this method, are insured to be responsive to the needs of those receiving the instruction. Subject-matter experts still have a key role to play in this method of curriculum development. The questions must be asked in ways that are performance-based, not terminology based. The responses must also be representative of the groups being surveyed (survey is used in the generic sense here and does not restrict the method of enquiry).

This process can be used in concert with or subsequent to the "Rational Process" mentioned above. An initial curricula, lesson plan, syllabus, or technique may be based on a "rational process" and subsequent curricula, plans, syllabi, or techniques based on the more reliable, valid, and defensible "assessment process."

Another method incorporating the two would be an evolutionary approach using a "generic" curriculum designed to inform the clientele of the subject so that the subsequent assessment would be more likely to identify the issues associated with the topic. This would be particularly useful in esoteric areas where it is likely that the clientele "does not know what they do not know" and could

not respond precisely to the issues in a general assessment. It would be essential, however, to follow the generic curriculum with an assessment to determine the most appropriate instruction to be offered subsequently.

The Development of a Discipline: A Case Study

Most of the literature addresses the refined or established methods which should be used to develop a curriculum. There are several reasons the literature is largely silent on the germinal or transitional approaches to curriculum development. Seldom are there emerging disciplines, outside the academic enterprise. Within academe, there are generally opportunities to "test" courses and curricula prior to implementing them. Additionally, courses and disciplines normally grow out of other, well-established fields of study. In fact, criminal justice or criminology represents one of the most recent fields of study and an example of the development of a discipline. The development of the curriculum and discipline of criminal justice is presented here as an example of the exigencies and time-frame such a curricular development can expect. The refined discipline present today is the result of more than 70 years of development. This development has used many of the same approaches suggested in this document.

The academic discipline of criminal justice can be traced to the early part of the twentieth century when August Vollmer taught the first crime-related courses at the University of California at Berkeley. In 1929 the University of Chicago also created a police training program as a part of the curriculum in the department of political science. Some of the courses offered by these programs were Police Administration and Police Procedure.

Various institutions initiated police science or criminal justice courses at a steady pace up to 1965. These programs were modeled after the Berkeley and Michigan State University programs, both founded by August Vollmer, and the emphasis was on training individuals to administer the criminal justice system. The criminal justice discipline experienced a phenomenal growth rate in the late 1960s and early 1970s. By 1973 the number of institutions offering criminal justice programs, as reflected by the institutions participating in the Law Enforcement Education Program, had reached almost 700. Unfortunately, the rampant growth in criminal justice education programs has caused some to question the credibility of the discipline due to the lack of a well-founded theoretical base.

Just as there are differences in the educational approaches to disciplines, there are sometimes differences in the disciplines themselves. It is critical to recognize the differences, and make concrete decisions about courses. For example, the discipline of criminal justice is viewed by some as being totally separate from the study of criminology. Others view the former as being an integral aspect of the latter. Criminal justice is seen by some as *applied criminology*, and for others it is an area for academic concern on the part of criminologists. Whether the two areas-criminal justice and criminology - are seen as one discipline or two mutually exclusive disciplines, none can ignore the fact that the two are closely intertwined.

The main difference in the two perspectives seems to be the usage of and emphasis upon the law. Criminology views the law as that which designates the area of study - criminal behavior. "Criminal behavior is behavior in violation of a criminal law. No matter what the degree of immorality,

reprehensibility, or indecency of an act, it is not a criminal act unless it is outlawed by the state."[25] Criminal justice, on the other hand, is a "legal entity." "All the agencies, offices, and programs in criminal justice exist by law and are controlled by the legal process."[26] Where criminology uses the law as a tool to define its area of interest, criminal justice if formed and defined by the criminal law. As a result, criminal law courses are integral, perhaps the most integral of all courses, in criminal justice education.

The emphasis in criminal justice begins with the legal definition of crime. This reflects or compliments the perspective of the Classical School: "The doctrine of the Classical School is *nullen crimen sine lege*, that is, without a legally defined harm there is no crime."[27] The focus of concern is upon the act and who committed it. Perhaps the fact that criminal justice is classical and criminology is positivistic accounts for the lack of continuity, and sometimes open animosity, between the two perspectives. While it might be interesting to describe the development of criminology as a theoretical field of study, space here will not be used. In the opinion of the author, a valuable description of that discipline is contained in *The Evolution of Criminology.*[28] A final example of the relatively recent development of a related discipline - criminal justice - is instructive.

Criminal justice education was initially characterized by a large degree of diversity and lack of direction.[29] There was an obvious need for convergence of curricula and some specificity as to where criminal justice education has been, is, and where it is going.

Criminal justice education, that is, the merging of higher education and criminal justice, probably began in the early twentieth century with the initiation of the Berkeley Police School in 1908 by August Vollmer. It was the first formal effort to train policemen in the United States and many of the instructors were drawn from the University of California at Berkeley.[30] Vollmer, the foremost figure in American policing history, believed that "the professional policeman would be distinguished from his predecessors by the level of his formal training both before and after recruitment and that new ideas from the universities could provide valuable insights into the causes of crime and the means for preventing it."[31]

Vollmer's interest in educating policemen provided the impetus for criminal justice education and in 1916 the first crime-related courses were taught in an institution of higher education--the University of California at Berkeley.[32] At the Los Angeles campus of the University of California in 1918, a group of police administrators initiated a workshop for police which included visits to various social agencies in Los Angeles. Yet it was not until 1923 that the first degree with even a minor in a criminal justice field was issued. It was a Bachelor of Arts degree of Economics with a minor in Criminology and was awarded by the University of California at Berkeley to a police officer.[33]

The next major advance in criminal justice education occurred in 1929 when the University of Chicago created a police training program as a part of the curriculum in the Department of Political Science. "August Vollmer was appointed Professor of Police Administration and taught several technical police courses in police related areas."[34] This police training program only lasted three years, but it marked the first effort to place police "training" courses in an undergraduate curriculum.[35] In 1930, a former Berkeley police officer and graduate of the University of California

initiated a complete program of police education at San Jose State College. This marked the first complete program of police education which was considered a major academic field that was included in the regular curriculum.[36] The method used to develop the curriculum was similar to the “rational process” model described above but clearly there were “subject matter experts” involved in the process.

In fact, it is important to note that all of the major strides in criminal justice education to the early 1930's were direct results of the Berkeley influence which is synonymous with the name of Chief August Vollmer. This period of criminal justice education has received various names such as the "imitative period" and the "germinal period,"[37] but a more fitting title would be the "Berkeley Era." Ironically, the last phase of the Berkeley Era involved the initiation of the Bachelor Degree Program in Criminology at the University Of California at Berkeley in 1933. After 17 years of offering criminology courses, the University of California could issue its first degree. This program, of course, was organized by August Vollmer. The curriculum was not limited to technical subjects but was divided into three areas of emphasis--technical, legal and social.[38]

In 1935, the Michigan State University established a complete curriculum in police administration.[39] It was a five-year program which involved the cooperation and coordination of the Michigan State Crime Commission, Michigan State College (now Michigan State University), and the Michigan State Police. The program included three years and one term of course work at Michigan State College, eighteen months of training and internship with the Michigan State Police and six months in residence with another law enforcement agency. The program expanded and in 1938 there were 194 new enrollees. During that year the program was altered to three years of academic work and one year of in service training. In 1940, courses in forestry and conservation were added to broaden the alternatives of students. "In 1943, the twenty-three graduating students entered military service. In 1944, few of the remaining undrafted civilians could meet the strict physical requirements of Police Administration."[40] This ended the momentum of the academic-training combination in criminal justice education.

The evolution of criminal justice education to this point reflects the influence of its germination within the academic environment. The first efforts in 1916 were intended to provide training for the practical and the technical aspects of training accomplished by educators. The contemporary era began at the Michigan State University. In this era a definite distinction was made between criminal justice education and criminal justice training.

Between the commencement of the contemporary period in criminal justice education and the early 1960's, crime-related programs tended to consolidate, expand and gradually take shape as an academic discipline. Foster reports that a "trend that has occurred during the decade of the 1960's is that of the new programs' focus, not on preparation for service in a single component of the criminal justice system, but on developing the criminal justice system generalist."[41] By 1965 there were 64 institutions offering criminal justice education programs.[42] At this point, it appears that criminal justice education is progressing at an orderly rate and direction. This "orderly" expansion ceased and a phenomenal growth occurred in criminal justice in the mid-1960's. Foster states "Since the mid-1960's, crime-related degree programs have experienced a growth pattern unparalleled in American higher education."[43]

In 1964, President Johnson signed the Law Enforcement Assistance Act which created the Office of Law Enforcement Assistance. This office was designed to foster new methods for reducing crime dealing with criminals through federal aid. In 1967, the President's Commission issued task force reports on every phase of the criminal justice system. The general report, The Challenge of Crime in a Free Society, recommended, among other things, that all police departments establish minimum educational requirements of the baccalaureate degree for supervisory and executive ranks. Just prior to the release of the Commission findings, the Office of Law Enforcement Assistance began encouraging law enforcement education by awarding curriculum development grants to two- and four-year institutions throughout the United States.

The actions gained momentum in 1968 with the passage of the Omnibus Crime Control and Safe Streets Act which incorporated the Office of Law Enforcement Assistance with the Law Enforcement Assistance Administration. This agency was responsible for carrying out programs "of academic educational assistance to improve and strengthen criminal justice" professionals.[44]

By 1973, the number of institutions offering criminal justice programs as reflected by the institutions participating in the Law Enforcement Education Program had reached almost 700.[45] A logical question, and a prominent question in many circles, is whether educational institutions would be able to maintain the orderly direction prevalent prior to the 1960's. Today there are more than 900 academic programs in criminal justice and criminology. This is actually fewer than were in existence by the late 1970's. The retrenchment and reduction of programs is due to faulty curriculum development and uncertain foundations on which to build programs.

The "rational process" of curriculum development seen earlier was not followed by an "assessment process" in many colleges and universities. Some programs were uncertain as to the appropriate focus - training or education - and the uncertainty contributed to the demise of many of the programs. What we will ultimately describe here is a training initiative, but one which is based on sound educational theory and good practice. There will develop, undoubtably, a debate as to the efficacy of training versus education, particularly within the cognitive domain. For that reason, we will further describe the differences in training and education and the development of a professional curriculum. It becomes even more important when we discuss evaluation methods and assessment objectives.

Technical versus Academic

The first set of educational models to be discussed is the least complex. It is the dichotomy of training versus education or, as one writer terms it, "technical model" versus "academic model."[46] The dichotomy does not actually form a continuum. but rather resembles two baskets in which education programs may be placed, based on their thrust and emphasis.

Technical Model. The "technical model" of criminal justice educational programs according to Mathias, "is primarily concerned with the preparation of persons to enter directly into the criminal justice system without any training.[47] This model is made up entirely of "how to" instruction with little or no indication as to "why." This type of training is intended to "develop mechanical skills while engendering little insight into the underlying concepts and value systems which comprise the assumptions of the relative worth of any given aspect of human behavior."[48] Its objective is to

produce a practitioner who acts or reacts unthinkingly to a given situation for which he has been trained. The technical model is characterized by: "(1) practical, vocationally oriented courses. ..; (2) hands-on instructional techniques; and (3) instructors who generally come from agency backgrounds. ..and often lacking typical academic credentials."[49]

The training model might be that model preferred by the elements and personnel of the criminal justice system. It would provide courses very similar to what the personnel have already experienced in their pre-service training, and, therefore, would result in a minimum of change. The value of the initiative is the degree to which additional information is provided, insuring that education and professionalization are taking place. Also, organizations may prefer the technical model because a participant in this type of program would be able to immediately implement the training. This utility, however, is predicated on the proper and appropriate course development and curriculum development approaches.

The faculty of the technical model programs, as described above, would most likely possess an agency background or experience rather than academic credentials since the instruction would be applied training rather than theoretical concepts. The most available source of persons with this agency background is the criminal justice system itself. For that reason, it is likely that the faculty of technical programs would be full-time criminal justice practitioners and part-time instructors.

Academic Model. The other half of the dichotomy of criminal justice educational programs is called the "academic model. " It is based on the assumption that "a liberal arts education is the optimal preparation for citizenship in general"[50] and that universities and colleges function to provide the liberal arts education to everyone, thus making them generalists who can be trained to perform tasks more ably with such an education. Although this seems to be a very “unfocused” approach, it is based on and consistent with the mission of the organization - the college or university - and is then applied to the discipline of criminal justice. The assumption inherent in a liberal arts education having utility to the discipline of criminal justice is not without foundation. The Task Force Report on Police, in 1967, stated, "It is nonsense to state or to assume that the enforcement of law is so simple that it can be done best by those unencumbered by the study of the liberal arts."[51] In essence, the Task Force served as a panel of experts or subject matter experts and rendered their opinion as to the appropriate curriculum.

The courses taught in this type of environment would center around the "why" or theoretical foundation of criminal justice practice. Such education "is designed to prepare professionals who will exercise a great amount of discretion and good judgement in a highly charged political environment." The theoretical orientation is necessary because it "engenders the ability to generalize, to base responses in a given situation upon an understanding of the broader context of an individual's role. The development of this ability is what educational institutions do best."[52]

The orientation of an academic program in criminal justice would be to require a foundation of liberal arts education, and then build on it a systemic criminal justice education. Since the criminal justice curriculum would be holistic in nature, the curriculum would conform to a systems approach or a “spiral” described earlier.

The faculty of a criminal justice program conforming to the academic model would be comprised of those holding adequate academic credentials and perhaps practical experience, but if one of these characteristics had to be forfeited, it would be the experience. This type of education would "require a person to take more than a superficial look at techniques in which he is trained or will be trained. It would emphasize the theoretical basis of behavior with little emphasis on the “practice” of justice other than the intellectual, critical thinking processes applied to the justice issues. The result of this type of education would be an examination of present practices and the formulation of alternatives. This is supported by Law Enforcement Assistance Administration[53] recommendation that:

> Faculty members possess at least a Master's Degree; Some members should possess doctoral degrees. The hierarchy for evaluation purposes is as follows:
>
> (1) Most desirable: degrees and experience
>
> (2) Second most desirable: degrees without experience
>
> (3) Third most desirable: experience without degrees

The academic and the technical models of criminal justice education provide the extremes of specialized educational programs. By identifying these two models, it is possible to examine programs and say that they resemble one or the other, but this is not adequate for an evaluation of criminal justice education. It is possible that many programs are marginally academic, or it may be that a program which has the curriculum emphasizing some parts of both would be more advantageous.

An appropriate discussion of criminal justice education goes into more detail in delineating models of curriculum. Tenney[54] recognizes that criminal justice, unlike most other professions, places its education process at the undergraduate level rather than the graduate level. He states:

> no sophisticated individual would presume that the holder of a baccalaureate degree with a major in psychology, or sociology, or English, or history is particularly professional in these fields. His professionalization will come, if at all, in Graduate School and beyond.[55]

This graduate education includes a considerable training thrust, as described by Tenney. This is very obvious in graduate curricula in law and medicine. Tenney contends that there are three models of criminal justice education rather than two.

Training Model. Training courses are those directed toward providing the student with the ability to perform certain skills.

> They are directed primarily to the mastery and application of particular rules, to the development of particular mechanical skills in the operation of particular items of equipment or to the development of skill in the performance of particular maneuvers concerning which

little or no discretion is involved.[56]

With some courses, it is obvious that they are oriented toward training. Examples are self-defense and firearms training. In other cases, the manner of teaching and content determine its character.

Professional Model. Tenney's intermediate classification of curriculum is the professional model which seeks to provide at the undergraduate level, that education and training which other professions provide at the graduate level. Professional courses should seek to achieve at least one of three objectives:

> the course should be directed toward achieving a goal or set of goals;
> an awareness of alternative methods of achieving these goals should circumstances vary; or
> the course should develop a foundation of expertise in certain subject areas.

The differences between the person exposed to the training model and one exposed to the professional model is "the trained individual may be identified by what he knows; the professional individual is recognized not only by what he knows but how he behaves as well."[57]

Social Science model. Courses classified as "social science" are designed to prepare the student for study rather than to prepare him to function in the system. These courses teach students about a particular subject, but are not designed to enable them to work in the area being studied.
Tenney's evaluation and classification of criminal justice education programs centered on the descriptions of courses of the various programs. A program was classified as training, professional or social science, if "a significant number of its courses" are of a certain variety. Tenney's material indicates he believed that most of the two-year programs in the crime-related discipline were training-oriented, while four-year institutions tended to have a professional orientation.[58] The debate between proponents of a liberal arts orientation and proponents of a professional or specialized orientation is viewed as one of the ancient and continuing debates in education.[59]

Brubaker states that the issue is certainly a recurring one in discussions of the philosophy of education.[60] These statements point to the fact that there is no consensus as to the appropriate model of education. Some, such as Thomas Eynon, stand staunchly on the liberal arts in stating, "Higher education in criminology and criminal justice means university and education, not trade training."[61] Yet Eynon views the reality of criminal justice education to be oriented toward training:

> We lack good theories, so spend our time training instead of educating. Because we think that there is something special or unique about criminal justice, we have made the mistake of hiring uneducated practitioners as university teachers and have managed to continue transmitting folklore as "conventional wisdom."[62]

The models described above indicate the diversity in curriculum design. In fact, the proliferation of programs in criminal justice since 1965 has resulted in and reflected a massive lack of direction and orientation. Organized curriculum design and evaluation seems to have been nonexistent and the void has been filled with a "helter-skelter" approach. Guidelines as to curriculum design need to be detailed and methods of evaluation proposed.

The development of courses in criminal justice has been evolving since Vollmer taught the first police science courses at the University of California, Berkeley in the late 1920s. In the ensuing seven decades, the discipline has still not reached the refined stage where there is a "paradigm" of criminal justice. In fact, Kuhn would suggest it is still a pre-paradigm discipline.[63] There is no "standard" curriculum, or even a core of courses which is accepted and replicated throughout the discipline.[64] This related experience would suggest that it is unrealistic to expect a curriculum in an esoteric discipline or field of study to develop into a refined and established curriculum in a short period of time. A final example from police education and training is instructive and validating.

Blended Education and Training: Specific Examples

A blended version of training and education can be seen in the description of the initiatives below. They represent some of the most respected and prosperous programs in the nation and serve as strong examples of the development of training initiatives with sound, reliable, and valid developmental processes.

In 1951, the University of Louisville initiated a police educational and training program called the Southern Police Institute. The development of this program was based on the recognition that the changing technology and demographics in the United States suggested the need for better trained law enforcement administrators. This program of study attracted police administrators from throughout the southern United States (originally it was believed that there would be Northern, Eastern, and Western Police Institutes, thus the name "Southern Police Institute"). Formed under the assistance of a Ford Foundation grant, the "curriculum" consisted of three fields of study which were believed to be appropriate for police administrators. Under the direction of John Klotter, a major figure in criminal justice education, and subsequent directors of the School of Justice Administration, University of Louisville, the courses were combined to form a curriculum which was considered the strongest in the instruction of police administrators. The curriculum was replicated and offered within the FBI Academy as the "National Academy" for police administrators. Dr. Richard Stephens (Colonel, U.S. Army, Retired) of the University of Louisville, utilizing his experience gained in curriculum development at the U.S. Army's Military Police School, refined the curriculum and tailored it to meet the needs of the National Crime Prevention Program, University of Louisville. Similarly, other programs have refined the approaches to make them more applicable to other audiences, as was the case with the Administrative Officer's Management Program, North Carolina State University, which emphasizes the research, development, public administration and budgeting aspects of police administration. Each of these programs has assessed, evaluated, and revised its curriculum many times.

All of the programs described - the Southern Police Institute, the FBI National Academy, and the Administrator Officer's Management Program - began with the germinal approach described above. A select group of "experts" were convened to develop the first courses offered within the curriculum. Based on their knowledge of discipline, the definition of the target audience, the needs of that audience, and the resources available, courses were developed. SPI used a small group of experts, as did the FBI. The North Carolina State program used a large, diverse advisory board to develop, authenticate, and validate the curriculum.

During the transition, each of the programs refined and revised the curriculum, based on changes in the target audience, developments in the field of study, and the identification of "needs" based on surveys and analyses. The Southern Police Institute, for example, surveyed agencies to determine the specific needs and expectations. Surveys of participants were then conducted to determine the degree to which the existing program met the needs. Changes were then made in the curriculum based on the "gaps" that were exposed. Thus the program went from a germinal or developmental program in the 1950s and 1960s, through a transitional phase in the 1970s and early 1980s, to become a refined program, based on sound curriculum development methodology including educational objectives, in the late 1980s and 1990s. The linking of courses was consistent with the "Spiral Curriculum" described by Bruner[65] and the continual revisions were based on information gained from subject-matter experts as well as participants and instructors.

Summary

The implications for this type of instructional approach for our purposes are clear. It is important that the development of curricula and programs of instruction establish identifiable and assessable performance and competency standards. Once these are established, the process to attain the standards can be developed. The rate at which some individuals or groups accomplish the goals or objectives will vary, as will the time and resources. An individualized, non-didactic approach can accommodate those differences and still establish or judge the competency of the professionals.

It is far easier to say these things than to do them. The first step in the process of curriculum design is to determine the needs. Once this is done, the knowledge, skills, and abilities can be refined, as goals and objectives, and the system which best accommodates the knowledge, skills, and abilities can be identified. Next we will address the assessment of needs, how the assessment can be accomplished, and the implications.

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Chapter 3
Assessment of Training Needs to Determine Curricular Content

Chapter 3 Outline

Assessment of Training Needs to Determine Curricular Content

- *Introduction*
- *Needs Assessment Methods*
- *Process for Assessing the Needs: Synthesis of Strategies*
- *Gap Assessment*
- *Criterion for Competency and Performance*
- *Summary*

Introduction

Before proceeding with the process of Needs Assessment, some definitions may help to standardize the discussion. "A training need is a need for human performance improvement that can best be met by training of some kind."[1] Similarly, needs assessment is the "process of examining training needs to determine how best they actually might be met."[2] Some authors insert the identification of training needs as an intermediate step and it may be defined as "the process required to detect and specify training needs at individual or organizational levels." A critical element of the needs assessment is the identification of "the differences between the ideal and the actual characteristics of the targeted learner group."[3] The literature suggests that tasks as well as process must be determined, then gaps explored to identify the needed elements in a training curriculum. The process of identifying and assessing training needs is often intuitive and non-systematic. What is proposed here is a systematic process which would apply to any type of training.

Needs Assessment Methods

A general process which is consistent with curricular Needs Assessment and loosely modeled after Peterson's process[4] includes the following steps:

- Become aware of problems which can be addressed through training
- Develop performance objectives or goals of the training initiative
- Identify training needs or the components of training
- Analyze training needs or determining who needs what
- Develop training objectives or things participants should be able to do upon completion of the training
- Develop the curriculum to accomplish the performance objectives and the training objectives

Clearly there are several points in this process which require information. The first, alertness to problems, is typically general and non-specific. Each of the other steps of the process require information or data in order to proceed appropriately.

Relevant literature suggests several approaches to gathering the information needed to make decisions at

each of the steps in the process. Below are options adapted from Kern et al.[5] and Finch & Crunkilton[6] which are used in assessing needs and developing curriculum for professional training:

Method of Assessment	Advantages	Disadvantages
Informal Discussions	Convenient Inexpensive	Lacks rigor Contains biases
Formal Interviews	Standardized Qualitative information	Reliable Not representative Expensive Contains biases
Focus Groups	Efficient Qualitative information	Requires skill Not representative
Questionnaires and Task Analyses	Standard Methodological rigor Quantitative	Skill Not qualitative Time consuming
Direct Observation	Assesses existing skills Informal Assesses existing ability	Time consuming Contains biases Does not assess performance
Proficiency Tests	Efficient Effective Assesses existing Ability Assesses knowledge	Time consuming Does not necessarily assess real-life performance Requires high level of skill to develop
Audits or Organizational Outcome Measures	Unobtrusive Assesses performance Methodological Rigor	Requires performance standards Requires resources Produces incomplete data
Strategic Planning Process	Produces Prioritization Involvement by key persons Qualitative Involves key people Establishes goal/objective	Requires skilled facilitators Time consuming Not quantitative

Before commenting on a process for assessing training needs, these options will be briefly described:

Informal Discussions

Although it is convenient, inexpensive and quick to perform a Needs Assessment based on informal

discussions, this process, if used alone, is fraught with errors. The lack of structure in the discussions is a major flaw but even more dangerous is the reliance upon a non-methodologically structured sample of a professional population. Bias is inserted when the groups or individuals have been selected by convenience or, worse still, based on vested interests in the training. Objectivity is necessary to insure valid results from such discussions. The selection of those with whom the discussions are held should be done carefully so that the results are likely to be reliable (same results likely from other respondents) as well as valid.

Formal Interviews

While better than informal discussions, formal interviews still may lack representativeness and generalizability. They add the component of reliability due to the structure of the interviews. They also allow qualitative elements and depth of information. This method is better suited for small populations where the entire or a substantial portion of the population can be interviewed. The structure allows comparisons and the determination of priorities and weights.

Focus Groups or Groups of Experts

On of the traditional methods of assessing needs, training or others, is the use of focus groups. These groups, if selected properly, can serve as proxies for the entire field or occupation. If not selected properly, they represent a flawed approach to getting answers. The expert groups, sometimes called the Delphi method,[7] has as much applicability to the development of needs as to the development of content, as is discussed in the next section. The process can be formal and include questionnaires and several iterations to achieve consensus, or it can be informal and use a nominal group method of facilitated discussion. If the focus groups consist of subject matter experts who (1) are knowledgeable of the specific tasks and activities to be performed, and (2) are recognized experts whose professionalism, currency, and objectivity are well known, the results of the focus groups should be both reliable and valid. The validity of a needs assessment using this approach can be verified through the use of other focus groups convened to validate the first or other assessments. This process could become rather convoluted and counterproductive but could provide the curriculum developers with confidence that the tasks and activities included in the needs assessment are appropriate and comprehensive. While qualitative insight and information is a distinct advantage in this method, objectivity and bias are disadvantages to be guarded against.

Questionnaires or Task Analyses

"Few content determination strategies have seen such widespread use as task analysis."[8] It is probably the most accepted method of needs assessment in vocational education and professional training. The process of job task analysis requires a thorough and systematic review of relevant literature in the occupational area to determine if other analyses of the occupation or activities have been conducted which may be of use. If so, these analyses may help to begin the development of or listing actual or potential tasks within the targeted activity. So widely accepted is the task analysis process that most occupations have had some variation of the process and the listing of tasks incumbent in the job or activity. If such analyses are not available, observations may be necessary to compile the lists of tasks.

McGaghie et al.[9] comment on the processes which can be used to develop such an inventory within the medical profession. They agree that the inventory is the most logical method of beginning the development of a training curriculum. They say, "While incomplete as a curriculum determinant, precise information on these matters will facilitate the task of curriculum designers and make the product of their efforts more realistic…." In addition to the task analysis, they suggest two methods or a combination of methods which may be used to formulate the inventory: a personal account of activities, and observation by peers or others. While self-reports are the most direct method of collecting information about the step-by-step tasks which contribute to the accomplishment of an activity, a narrative by a practitioner may not include all of the relevant steps. Some tasks may be taken for granted or simply assumed and not listed. The self-reported activities may lack specificity but that specificity may be teased out by a skilled interviewer later.

The other method they describe for compiling an inventory is observation by others of activities and tasks. The use of trained observers would contribute reliability to the process and specificity, which might be missing from a self-reported diary of activities, would be observed and recorded. Additionally, the observation of tasks may group the tasks in any way which would be helpful to the curriculum development process. An example of the complex coding of activities is seen in Brody and Stokes' [10] assessment of physician's activities by function, by category of collaboration, by time, and by location.

Once the inventory is established by any process (literature, previous task analyses, self-reported tasks, observation), duplicate items are deleted and additional items are added. The lists are collapsed into a comprehensive but non-duplicative "inventory" of tasks. Typically, the inventory is then administered, in questionnaire form, to a sample of workers or practitioners who are responsible for the targeted activities. While it is certainly not necessary to survey the population of practitioners, large samples reduce errors in the results. Whether large or small, the sample should be representative of the occupation or occupations associated with the activity. If the sample is biased by representation or exclusion, the results may be less valid. The practitioners are instructed to mark the tasks that are routinely, frequently or seldom required in the activity. They may also be asked to rate the criticality, complexity, or seriousness of the task or another group of managers, administrators, or policy officials may be asked to prioritize the tasks after the inventory is validated and some tasks seldom or never performed are eliminated. The remaining tasks represent those needed for the activity or occupation and, therefore, the subject of training for the completion of the activity.

Care should be taken to include items which may seldom be required but may be of critical importance. An example is firearms training for police. The discharging of a firearm in the line of duty is one of the rarest of activities in police work but it is of sufficient importance that it receives significant attention in all training programs within that occupation.

The task analysis provides reliability and validity if properly conducted. It represents both comprehensiveness and consensus. Lacking in the questionnaire or task analysis method is qualitative information on the difficulty, criticality, or complexity of a particular task in the inventory. Curricula based on the task analysis method, particularly if the task analysis is used in concert with other methods, is likely to be most appropriate to the activities under consideration.

Direct Observation or Critical Incident Technique

Although it was mentioned above as a means of developing a comprehensive list of tasks for the task analysis, direct observation is a method for cataloguing the steps, tasks, and content, both technical (which is clearly the focus of task analyses) concerns and affective concerns such as attitudes or values. A "critical incident" is one "when the observer sees their purpose and consequence as being clear."[11] The examples of activities or critical incidents to which this method may be applied are "incidents" such as workers dismissed during a previous period of time, or success in a particular activity at a particular place. A "critical incident form" is typically the method of standardizing and formatting the information. This form may include categories such as "What led up to the incident?" and "What were the precise steps taken following notification?"

This method is consistent with an "after action report" or "lessons learned" approach to debriefing personnel on actions, activities, steps, successes, failures, and suggestions for future actions or activities, when the purpose is to identify needs for training activities. This is a valuable tool in developing and in refining training curricula. It can, of course, be used in concert with other methods in assessing needs and in revising task lists.

Tests of Proficiency

Needs assessments for activities where little information exists but where individual aptitudes and determinations of success or failure are measurable may lend themselves to tests of proficiency. These tests can address cognitive or psychomotor abilities and may be called "exercises," "readiness determination," "ability assessments." They are not necessarily "paper-and-pencil" tests but are objective means for determining the abilities and competencies of those reasonably expected to accomplish a task or activity. By measuring the success or failure, it is easy to determine the need for training or further training in specific elements of the task. Anxiety, extraneous factors, and the representativeness of those being tested are elements which can produce spurious results. Additionally, it is necessary to have some measurable indication of success or competency in order to determine needs based on failure to meet that standard.

Audits or Organizational Outcome Measures

This method is similar to tests of performance but applies to group or organizational outcome measures rather than individual performance. As with performance tests, there is the need for some level of success or competence in order to determine needs based on failure to meet that standard. Audits may be unobtrusive and, if properly constructed, will assess real-life performance.[12] The process should be a formal one, whether for audits or observation of organizational performance. Methodological rigor can be attained through training to insure inter- and intra-rater reliability. This process can be expensive and time-consuming but, if conducted properly and if the standards being judged are appropriate, it can be a valuable method of determining needs as well as developing curriculum.

Strategic Planning

Perhaps the most versatile method of determining needs, and also of determining goals and objectives, is the strategic planning process. If done appropriately and with skilled facilitators, the process can address strengths, weaknesses, opportunities, and threats, all within the organizational or political environment, and may contribute qualitative elements which can prioritize issues, tasks, activities and roles. Alone, strategic planning may not produce the specific elements needed to articulate a curriculum but used in concert with other methods, may be critical to establishing priorities, goals and objectives which can serve as performance measures and competency measures, elements often viewed as necessary to assess curricular needs.

Process for Assessing Needs: Synthesis of Strategies

As is no doubt clear, there is an advantage to using more than one of the methods described above. Some of the methods, such as the task analysis, provide objective, quantifiable information on the specific tasks needed to accomplish an activity. Other methods such as strategic planning and performance audits suggest the appropriateness and value of activities as well as goals, objectives and standards. In a developing discipline or activity, where standards of performance and competency may not exist and where activities involve heterogeneous organizations or components which, having existed separately may not have sufficient history to suggest collegial tasks and activities, it is not only advantageous but necessary to employ a combination of methods to assess the needs for a training curriculum.

Arguably, all of the methods for assessing needs could and should be employed if there is to be a comprehensive, reliable and valid needs assessment. Realistically, however, choices must be made. It is important to stress that objectivity and the reduction of bias should be key elements of the process. Additionally, a mix of quantitative and qualitative information is valuable. During the early assessments, it is often necessary to rely on less formal methods, using decision-making to reduce the disadvantages. For subsequent assessments and where there is sufficient time, care should be taken to employ the more complex but stronger methods, to include strategic planning, so that goals and objectives can inform and direct the process.

The complexity of the Needs Assessment is dependent on the complexity and scope of the training. A Needs Assessment for an introductory or familiarization training program, even though it might address a national audience, does not have the same intense Needs Assessment for content as one which would address technical or serious issues which would be delivered to groups whose actions are more critical.

Gap Assessment

Following the needs assessment, by whatever method or process is used for determining the tasks which are components of an activity or job, it is necessary to determine which ones are already present in the workforce and require no additional training. It may also be necessary to determine the degree to which some of the tasks are subjects of other training, either preservice or in-service, which the practitioner is likely to have received through other programs or processes. The purpose of the Gap Assessment is to

reduce repetition and redundancy in specific training components. In this regard, it is important to frame tasks and activities using terms which describe the behavior or the skill needed and not rely on esoteric jargon or terminology which may mask the behavior and result in duplicative training. If some practitioners are trained in "hazardous materials removal" and the activity is called "toxin cleanup and transportation" on the task inventory, the actual task and behavior required could be duplicative of existing training yet not readily apparent. Duplicity is not, in and of itself, bad if it is intentional. If duplicity is inadvertent, it reduces the credibility of the process and the program, as well as wasting resources.

Issues relevant to Gap Assessment

- Previous training and experiences
- Existing training
- Existing proficiencies
- Current performance
- Deficiencies
- Preferences regarding strategies
- Characteristics of learners
- Resources available to learners and instructors

These issues and elements help to focus consideration and assessment. Each represents a different aspect of the environment, organizations, or clientele. The systematic addressing of each issue and element insures that there will be little or no inadvertent duplication and helps to frame the curriculum.

Criterion for Competency and Performance

The segue from Needs Assessment to Curriculum Development is the determination of criteria for competency or performance. More will be said about Competency-based and Performance-based Instruction in the following section but the Needs Assessment process provides an excellent opportunity to get more information than simply the tasks which need to be the subject of the training.

Peterson[13] mentions the step of "Develop training objectives or things participants can do upon completion" between the Needs Assessment and the development of the curriculum. He states "The training objectives should fall into place naturally and easily from your training needs analysis work."[14]

Two types of objectives are identified in the curriculum development literature: *terminal objectives* and *enabling objectives*. "The terminal objective represents performance in the worker role or a close approximation of that role. It focuses on the way a student should perform when in the intended work situation."[15] The terminal objective is similar to a competency or performance objective and specifies the ultimate standard for an activity. "The enabling objective focuses on what the student must learn to attain the terminal objective. The enabling objective serves to guide students from where they are at the beginning of instruction to where they should be at the end of the instruction."[16] There is almost always a series of enabling objectives which serve to guide the learner, step by step, and affirm that they are progressing in the correct direction and in the correct order. Typically the enabling objectives move from the most simple levels to the most complex levels within the instruction necessary to accomplish the terminal objective. For this purpose, it is important to consider a taxonomy or classification of educational objectives. This classification is the starting point for the next section on "Curriculum Development."

Summary

There are informal methods of assessing needs for training initiatives and there are more formalized, standardized processes. Each method has advantages and disadvantages. What has been presented here has been the suggestion that the less rigorous approaches have a place in the initial conception of the training initiatives but, as the initiative matures and develops, the needs assessment should become more formalized, rigorous, and methodologically defensible. Methods such as the Delphi Technique and Task Analysis provide proven approaches to assessing the specific needs of a curriculum. Ultimately, tests of proficiency may prove to be a useful tool in needs assessment and, as described in the next section, curriculum development, revision, and evaluation.

Determining the goals and objectives of a training program is essential to success. Once objectives are set, it is easier to define needs and to identify gaps. Competency and performance are certainly dependant upon the objectives of the training program. Strategic planning can be a viable method for assessing needs, defining goals and objectives and revising the initiative. Additionally, the synthesis of approaches takes into consideration the advantages of the quicker, informal approaches and the rigorous formal approaches. We suggest a holistic approach to the assessment of training needs.

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Chapter 4
Curriculum Development and Revision

Chapter 4 Outline

Introduction

Curriculum Development is the term often used to describe both the entire process of assessing the need for courses, designing the program, developing the courses or lesson plans, implementing the training, and evaluating the training, which of course leads to refinement of the courses. As used here, however, "Curriculum Development" is defined as the methods of design and development of courses to meet the needs of a particular audience or the specific needs determined in a needs assessment.

As stated by Oliva, "Curriculum development is basically a decision-making process."[1] Those making the decisions must select the curricular emphasis, methods and organization, but the choices are made easier once viable and seasoned alternatives are articulated. That articulation of alternatives is the specific purpose of this section.

Program Design

Every training curriculum must have aims or objectives. It is necessary to first articulate, in very discrete form, the overarching objective, goal, or mission of the training program. This statement serves the principle of the initiative, guiding it and establishing its parameters. The development of courses for training and education must be consistent with the mission or objective of the initiative.

The organization of this section includes all of the elements necessary to plan and develop curricular content. The topics range from broad determinations of the educational objectives of the specific training courses to the course development methods. The emphasis is on methodology, not specific content. Content is determined by subject matter experts but should be done in a methodologically sound fashion. Matrices are presented to summarize the information but readers should be careful to use the matrices in conjunction with the content of this section, not as proxies or summaries.

Strategic Planning and Curriculum Development

Developing courses and curricula, as well as the assessment of needs, is consistent with the fundamentals of strategic planning. Strategic planning is more fluid and flexible than long range planning and has been applied to curriculum development as content has changed and as technological development has necessitated change in traditional approaches. Course development is clearly a planning activity.

Although planning has been defined many ways, perhaps the simplest and best definition is "the linking of knowledge to action." In framing this definition, Friedmann[2] also asks the questions: What knowledge is relevant and with whose actions are we concerned? Curriculum development seeks to answer the same questions. Strategic planning applied to curriculum development suggests that the following process be utilized:

Assess current and future needs
Establish objectives to meet those needs
Design a strategic plan (courses or curricula) to meet the objectives
Implement the plan (courses or curricula)
Measure the performance against the objectives
Revise the plan (courses or curricula)

This approach is consistent with the literature on strategic planning (for example, Smith[3]), and with the development of curricula for adults (for example, Finch and Crunkilton[4]).

As a concrete example, the process of curriculum development in medical education has been described as a "six-step" approach[5] which includes:

Problem identification and general needs assessment
Needs assessment of targeted learners
Goals and objectives
Educational strategies

Implementation
Evaluation and feedback

This process is the same as is used in the development of strategic plans to address any issue of current interest or necessity.

This section includes discussions on Determining Training Objectives, Determining Curriculum Content, Models of Instruction, Making Decisions in Curriculum, Including Critical Elements of Training Courses, Linking Courses into a Curriculum, and Revising and Evaluating Training.

Determining Training Objectives

Every serious article and book on curricular development stresses the necessity of formulating training and course objectives. The accepted process is to first judge the complexity of the learning exercise (course), design the exercise to address the objective, fit the instructional method to the level of complexity, and appropriately test or evaluate the abilities learned.

As was described in the previous section, two types of objectives are identified in the curriculum development literature: *terminal objectives* and *enabling objectives*. "The terminal objective represents performance in the worker role or a close approximation of that role. It focuses on the way a student should perform when in the intended work situation."[6] The terminal objective is similar to a competency or performance objective and specifies the ultimate standard for an activity. "The enabling objective focuses on what the student must learn to attain the terminal objective. The enabling objective serves to guide students from where they are at the beginning of instruction to where they should be at the end of the instruction."[7] Every course should have objectives. The more extensive courses would have both terminal and enabling objectives and the entire curriculum should have objectives or expectations for the learners. Framing the objectives is a key element in the design of curriculum. Fortunately there is significant literature to direct the development of course and curricular objectives.

Perhaps the most respected body of literature in curriculum development is *Taxonomy of Educational Objectives* often referred to as "Bloom's Taxonomy" in deference to the primary author, Benjamin Bloom[8]. This body of literature addresses three domains: cognitive, affective, and psychomotor.

Cognitive Domain

Most training and educational initiatives are primarily "cognitive" ones so Handbook I, devoted to the cognitive domain will be the first one described here. Usually the focus of a curriculum is the enhancement of intellectual abilities which "refer to situations in which the individual is expected to bring specific technical information to bear on a new problem."[9] Skills combined with knowledge result in abilities. This is the purview of the cognitive domain.

The authors state clearly, "we believe the classification and evaluation of educational objectives must be considered as a part of the total process of curriculum development." Educational objectives are simply the "explicit formulations of the ways in which students are expected to be changed by the

educational process."[10] While this appears to be a very basic part of any curriculum or course, it is one which is often overlooked.

The group of authors, headed by Benjamin Bloom, developed a taxonomy or classification of educational objectives for the cognitive domain. The objectives of a curriculum may range from the simple to the complex. The level of the objective determines the type of curriculum, the type of instruction and the type of evaluation or examination to be used. The taxonomy or classification developed and still referenced frequently in developing curricula, stated briefly, is:

1.0 Knowledge (defined "as those behaviors and test situations which emphasize the remembering, either by recognition or recall, of ideas, material, or phenomena" [11]
- 1.10 Knowledge of specifics
  - 1.11 Knowledge of terminology
  - 1.12 Knowledge of specific facts (dates, events, persons, places, sources, etc.)
- 1.20 Knowledge of ways and means of dealing with specifics
  - 1.21 Knowledge of conventions (ways of treating and presenting ideas)
  - 1.22 Knowledge of trends and sequences (processes and directions with respect to time; order of events)
  - 1.23 Knowledge of classifications and categories (classes, sets, divisions useful for a particular problem or issue)
  - 1.24 Knowledge of criteria (knowledge of criteria by which facts are tested or judged)
  - 1.25 Knowledge of methodology (methods of enquiry, techniques, and procedures employed in a subject field)
- 1.30 Knowledge of the universals and abstractions in a field (knowledge of the ideas, schemes or patterns by which ideas are organized)
  - 1.31 Knowledge of Principles and generalizations
  - 1.32 Knowledge of theories and structures

2.0 Comprehension (being able to make use of material or communication)
- 2.10 Translation (translate relationships expressed in symbols such as maps, tables, diagrams, graphs)
- 2.20 Interpretation (grasp the thought of a work as a whole)
- 2.30 Extrapolation (draw conclusions, predict trends)

3.0 Application (ability to apply generalizations and conclusions to actual problems

4.0 Analysis (breaking down material into its constituent parts, detecting the relationships of the parts and the way they are organized)
- 4.10 Analysis of elements (identifying the constituent parts)
- 4.20 Analysis of relationships (determine the relationships between the parts)
- 4.30 Analysis of organizational principles (assessing the structure and organization of the parts)

5.0 Synthesis (working with the parts of a problem or issue and combining them in a pattern or structure not there before)
- 5.10 Production of a unique communication (skills such as writing a procedure using organization of ideas and statements)
- 5.20 Production of a plan, or proposed set of operations (taking data or specifications and developing a plan of action)

5.30 Derivation of a set of abstract relations (formulate hypotheses or theories)

6.0 Evaluation (making judgments about the value of ideas, methods, solutions or materials)

6.10 Judgments in terms of internal evidence (assess probability of accuracy in reporting facts)

6.20 Judgments in terms of external criteria (application of standards or rules)

This classification, though cumbersome in places, provides an excellent and thoroughly researched method of judging the complexity of the learning exercise (course), fitting the instructional method to the level of complexity, and appropriately testing or evaluating the abilities learned (See, for example, Pelfrey[12]; as well as Pelfrey and Hague[13]). Most decisions related to the development of curriculum are based upon the educational objectives for each course or curriculum. The centrality of educational objectives compels us to use matrices later which include taxonomy-related objectives as a key dimension.

While fitting the curriculum to the learning or educational objective may appear simplistic, it is a step often overlooked in curriculum design. This is why virtually every book in the field stresses the use of a classification of educational objectives, with most using Bloom's Taxonomy. The use of this classification throughout this section will add clarity to the need for such as classification.

Brief Explanations of the Cognitive Taxonomy

Knowledge (recognizing or recalling ideas, material, or phenomena)

Knowledge of terminology: define terms, distinguish words, understand terms and concepts.

Knowledge of Specific Facts: recall facts, dates, recognize events.

Knowledge of ways and means of dealing with specifics: Familiarity with, conscious of, knowledge of rules, understanding continuity, know developmental categories, recognize range of features, know types, familiar with criteria, know basic elements, know how to attack or address problems, know various techniques.

Knowledge of universals and abstractions in a field: Know key principles, know major generalizations, be familiar with key laws, recall major theories, understand interrelationships, understand structural organization.

Comprehension (when confronted with a communication, knowing what is being communicated and how to use it)

Translation: translate from symbolic form, read

illustrations, read maps, tables, diagrams, graphs to or from verbal forms.

Interpretation: grasp a complete thought or situation, distinguish between appropriate and inappropriate conclusions drawn from a body of data or information, interpret social data, draw conclusions and state them effectively, predict trends.

Application (given a new problem, ability to apply correct abstractions without prompting)

Ability to apply generalizations to problems, ability to apply procedures to problems, skill in applying laws to situations.

Analysis (ability to break down material into constituent parts and detect relationships of the parts)

Analysis of elements: ability to recognize unstated assumptions, ability to distinguish facts from hypotheses, skill in identifying motives, distinguish conclusions from the facts supporting conclusions.

Analysis of relationships: comprehending interrelationships and order of relationships, recognizing relevant elements for validation, recognize essential facts, distinguish cause-and-effect, detect logical fallacies in arguments.

Analysis of organizational principles:

Recognize form and pattern in actions and behavior, ability to infer purpose or point of view, ability to infer philosophy, ability to recognize bias.

Synthesis (putting together elements and parts to form a whole)

Production of a unique communication

Ability to write creatively, make extemporaneous speeches.

Production of a plan Ability to purpose ways to test a concept, integrate diverse concepts into a solution, plan a unit of instruction, design tools or machines.

Derive a set of abstract relations: Ability to formulate a theory of action, perceive various was to organize actions or

elements to address an issue or problem.

Evaluation (making judgements about the value of ideas, works, methods, or solutions)

Assessing work, accuracy, or arguments, using certain criteria, comparing facts, theories or generalizations to determine validity; appraise judgements or values.

Affective Domain

The development of educational objectives within the affective domain was a part of the same "Taxonomy Project" which produced the Cognitive Domain objectives described above. This portion, however, was directed by Krathwohl, with the assistance of Bloom and Masia.[14] The authors recognize, again, the value of objectives in producing learning experiences within any domain:

> If affective objectives and goals are to be recognized, they must be defined clearly; learning experiences to help the student develop in the desired direction must be provided; and there must be some systematic method for appraising the extent to which students grow in the desired ways.[15]

Though they attempted to use the same basic assumptions for the affective domain as they did for the cognitive domain, the authors concluded that:

> It was presumed that the affective domain, like the cognitive, would be structured in a hierarchical order such that each category of behavior would assume achievement of the behaviors categories below it. But it did not appear likely that the principles of "simple to complex" and "concrete to abstract" would provided as appropriate a basis for structuring the affective domain as they provided for the cognitive domain.[16]

The continuum they developed did organize the process by which a phenomenon or value moves from a level of basic, general awareness to one of having power or control over the lives of people or becoming a life outlook. This process describes the degree to which a phenomenon is "internalized" or is incorporated within oneself. So, at one end of the continuum, there is the individual "perceiving" the issue, phenomenon, or information while at the other end the person internalizes the acceptance of emotion and feeling toward the phenomenon to the point that the acceptance is actually an integral part of the person's value system.

Kelman described the same process but used internalization as the last stage.[17] Krathwohl and colleagues used internalization as the description of the entire process of the affective domain. They viewed "compliance" as a low-level awareness, "identification" as a mid-range descriptor, and "internalization" as the development of a value complex which is more ingrained.[18]

Before describing and discussion the Taxonomy of Educational Objectives in the Affective Domain, it would be wise to point out that the affective and cognitive domains are not mutually exclusive. As will be obvious, some of the elements of the affective domain, particularly those at the lower

levels of the domain, are similar to some levels of the cognitive domain. The advantage offered by the affective domain is the appreciation of the information or "knowledge" as something more than simply rote memory.

The classification scheme for educational objective in the Affective Domain is:

1.0 Receiving (attending)
- 1.1 Awareness
- 1.2 Willingness to receive
- 1.3 Controlled or selected attention

2.0 Responding
- 2.1 Acquiescence in responding
- 2.2 Willingness to respond
- 2.3 Satisfaction in response

3.0 Valuing
- 3.1 Acceptance of a value
- 3.2 Preference for a value
- 3.3 Commitment (conviction)

4.0 Organization
- 4.1 Conceptualization of a value
- 4.2 Organization of a value system

5.0 Characterization of a value or value complex
- 5.1 Generalized set
- 5.2 Characterization[19]

Receiving, the first level of the continuum, is the sensitivity to a phenomenon or stimuli. The person must be willing to "receive" the message or information. Awareness, as the first subcategory in this level, is almost a cognitive endeavor. It requires that the learner be conscious of something, not for purposes of remembering it (as in the cognitive domain) but just to take it into account. The recognition or awareness is not based on information committed to memory or learned but on feelings, attitudes, and impressions. The recognition of people or events from recent news stories would be an example of "awareness." "Willingness to receive" is the next subcategory within Receiving. "Like awareness, it involves a neutrality or suspended judgement toward the stimulus."[20] It goes beyond simple awareness and extends to tolerance for a stimulus. Some of the terms which would be found in learning objectives at this level of the affective domain include "tolerance for," "accepts differences of," "amenable to," "disposed toward," "inclined toward." It is most often tested using interest inventories to determine things or stimuli the respondent finds not be unpleasant. The third subcategory in "Receiving" in the affective domain, is "Controlled or Selected Attention." The description given for this level which differentiates it from the previous one is "there is an element here of the learner's controlling the attention, so that the favored stimulus is selected and attended to despite competing and distracting stimuli."[21]

Responding is the second level of the taxonomy. "Responding" is used to describe "responses which

go beyond merely attending to the phenomenon. The student is sufficiently motivated that he is not just willing to attend, but perhaps it is correct to say that he is actively attending."[22] It represents a very low level of commitment. The first of the subcategories is "acquiesce in responding." This is synonymous with obedience or compliance and is more passive than active. This "willingness to comply" can be judged by the degree to which one does what they are expected to do. "Willingness to respond" suggests a slightly higher level of compliance in which the learner voluntarily engages in or practices an activity. The next subcategory, "satisfaction in responding" suggests that responding results in a feeling of satisfaction or an emotional response of pleasure to the task, activity, or stimuli. The continuum of subcategories in the second level of the taxonomy show a change from mere compliance to some level of eagerness in and action or activity.

The third tier of the taxonomy is that of "Valuing." It is defined as the recognition that a thing, phenomenon, or behavior has worth. Worth is an abstract concept that is self-defined based on one's own definitions and assessment. The first of the subcategories of Valuing is "Acceptance of a Value." It suggests a desire or a continuing desire or an acceptance of responsibility to do something due to its intrinsic value. "Preference for a value" shows a deeper involvement or interest where one willingly and somewhat enthusiastically accepts responsibility for a task or action because they find the purposes and objectives worthwhile and pleasant. Krathwohl describes the best test for "preference for a value" as a devised situation where a variety of choices of actions, items or criterion are available and the persons selects the one or ones for which they have a preference. "Commitment," the next subcategory, is synonymous with "conviction" and "certainty," not in the cognitive or intellectual sense, but in general reactions, beliefs, or values. It suggests a degree of loyalty to and strong acceptance for an ideology, feeling, or concept.

"Organization," the fourth level of the taxonomy, is a difficult one to describe. It is the initial development of a system of values where dominant and pervasive ones are evident and dormant ones less so. It suggests preferences within a preferred category of values. The first of the subcategories, "Conceptualization of a Value," involves the categorizing, and conceptualizing, though not necessarily in verbal terms, of value preferences. It is determined by evidence that evaluative judgements have occurred through an examination of the interrelationships between feelings and commitments. These are more at the unstated level, however. The second tier in this level of the taxonomy, "Organization of a Value System," does suggest the verbalization of an ordered set of values or relationships within values. It is shown by the degree to which a person can and does weigh alternative policies and practices, not in the intellectual sense, but in the sense of strongly preferred concepts.

The top level of the taxonomy is "Characterization by a Value or Value Complex." It suggests that the person has developed a "philosophy of life" through the integration of values and beliefs. The first of the subcategories is "Generalized Set." It is defined in a number of ways, including:

> a determining tendency, an orientation toward phenomena, or a predisposition to act in a certain way;
>
> a persistent and consistent response to a family of related situations or objects.[23]

While these are vague "definitions" it should be noted that the difficulty is in defining an abstract, almost indefinable concept. The best term which captures the thought of "generalized set" is "attitude cluster" based on judgements and opinions. The next subcategory, "Characterization," is the highest level in the internalization process. It represents a philosophical focus which emerges to the point that it is defined generally and has limits or borders that are relatively known and understood rather than vague and amorphous.

The Taxonomy of Educational Objectives in Affective Domain is somewhat useful in curriculum development. As stated earlier, most of what is done in education and training is cognitive but there is sufficient affective influences to merit inclusion. Most of those which can and should be addressed in curriculum, however, are in the lowest levels of the affective taxonomy. In fact, later, we will group all elements of the affective domain together when we begin to describe clear objectives and instructional techniques.

Psychomotor Domain

Armstrong and colleagues defined the psychomotor domain as behaviors that "place primary emphasis on neuromuscular or physical skills and involve different degrees of physical dexterity.[24] The development of literature addressing this domain has, for whatever reason, been far less prevalent than literature addressing the other two domains. The terminology describing the various taxonomies and the levels tend to use psychological categories. Additionally, there is no single accepted taxonomy for this domain where there is a high level of acceptance for the taxonomies described in the other two domains.

Probably the most widely accepted taxonomy in the psychomotor domain is that developed by Anita Harrow.[25] The model she described has six levels and subcategories within each:

1.00 Reflex Movements
- 1.10 Segmental Reflexes
- 1.20 Intersegmental Reflexes
- 1.30 Suprasegmental Reflexes

2.00 Basic-Fundamental Movements
- 2.10 Locomotor Movements
- 2.20 Non-Locomotor Movements
- 2.30 Manipulative Movements

3.00 Perceptual Abilities
- 3.10 Kinesthetic Discrimination
- 3.20 Visual Discrimination
- 3.30 Auditory Discrimination
- 3.40 Tactile Discrimination

4.00 Physical Abilities
- 4.10 Endurance

4.20 Strength
4.30 Flexibility
4.40 Agility

5.00 Skilled Movements
5.10 Simple Adaptive Skill
5.20 Computed Adaptive Skill
5.30 Complex Adaptive Skill

6.00 Non-Discursive Communication
6.10 Expressive Movement
6.20 Interpretive Movement

While this taxonomy provides great specificity, it may provide more than is useful here. Again, it is expected that most of the educational and training activities occur in the cognitive domain so that is the venue for detailed descriptions. For the psychomotor domain, it might be useful to have a less detailed but more obvious set of categories. Simpson developed such a taxonomy.[26] Actually, Harrow's taxonomy was a refinement of Simpson's. Below is a brief description of Simpson's taxonomy with examples for each general category:

Description of Simpson's Psychomotor Taxonomy[27]

Perception	ability to identify based on feel or touch.
Set	able to demonstrate use of simple tool, instrument, or mechanism.
Guided response	able to imitate an observed movement or procedure.
Mechanism	demonstrate mixing or combining of chemicals.
Complex overt response	operate complex or intricate equipment.
Origination	create original exercise, movement, game, or technique.

The three domains described should account for any and all educational objectives within a training or education curriculum. The development of training and educational objectives require the use of action words - verbs - to describe the behavior expected. Below is a table showing the levels in the three taxonomies and some verbs that would apply to each:

Cognitive Domain Taxonomy and Verbs

Level	Verbs
Knowledge	identify, specify, state
Comprehension	explain, restate, translate
Application	apply, solve, use
Analysis	analyze, compare, contrast
Synthesis	design, develop, plan
Evaluation	assess, evaluate, judge

Affective Domain Taxonomy and Verbs

Level	Verbs
Receiving	accept, demonstrate awareness, listen
Responding	comply with, engage in, volunteer
Valuing	express a preference for, show concern
Organization	adhere to, defend, synthesize
Characterization by value	show empathy, show ethical consideration

Psychomotor Domain Taxonomy and Verbs

Level	Verbs
Perception	distinguish, identify, select
Set	assume a position, demonstrate, show
Guided Response	attempt, imitate, try
Mechanism	make habitual, practice, repeat
Complex overt response	carry out, operate, perform
Adaptation	adapt, change, revise
Origination	create, design, originate

Cognitive: Recall or recognition of knowledge and the development of intellectual abilities and skills.

Affective: Changes in interest, attitudes, and values, and the development of appreciations and adequate adjustments.

Psychomotor: Develop manipulative or motor-skills which are neuromuscular or physical and involve different degrees of physical dexterity.

It is clear that more emphasis here has been placed on the Cognitive Domain. That emphasis is not accidental. While all three domains have bearing on curricular development, "with the exception of work by people like Rousseau, Froebel, Pestalozzi, and Neil, most of the rest of the world ... marches to the beat of the cognitive drummer."[28] The learning objective determine, to a great degree, the content as well as the delivery methods of a curriculum.

Determining Educational Objectives for Courses

There are three elements or components which should be considered in preparing educational objectives.[29] These are:

a. Activity: The behavior expected of the learner
b. Conditions: The conditions under which the behavior is to be demonstrated
c. Standard: The proficiency expected of the learner.

The use of specific verbs to describe the expected behavior or performance of the participant in a learning exercise is, of course, preferred. The more general the "objective," the less it is understood and the less likely it is to be accomplished. It is not necessary that the objective for a course be quantifiable but it should not be so vague that it is meaningless.

The conditions under which the behavior is to be demonstrated is either artificial (classroom) or realistic (simulation or actual practice) and this gives further meaning to the objective as well as the type of educational model, method and delivery.

The proficiency or mastery expected of the participant is key to evaluating performance as well as evaluating instruction. If the instructor cannot articulate the expected proficiency level, which is somewhat different from the behavior expected, there is little opportunity to assess the instruction, the learning, or the effectiveness of the endeavor. Typically, the performance levels differ from the behavioral expectations in terms of the quantifiability of the performance goals. Performance-based and criterion-based objectives and educational approaches are consistent with the last of the three elements.

Methods of Determining Curricular Content

The methods of determining curricular content range from very informal, *lassie faire* approaches to very formal, structured methods. The following discussion describes several methods along with the advantages and disadvantages of each.

DACUM Approach

A quasi-informal but successful method of developing the basic elements of instruction and curriculum is known as **D**eveloping **A C**urricul**UM** or DACUM. This approach was developed by the Canada Department of Manpower and Immigration along with the General Learning Corporation[30] and is a quick, straight-forward approach to developing the key elements of a curriculum. The first step in DACUM is the development of a single sheet skill profile which serves

as the curricular plan. The profile is typically developed by a group of experts or persons skilled in that particular profession or activity. The DACUM group or committee develops the profile which serves as the basis for instructional content and may suggest the evaluation instruments or approaches.

Using the profile as a guide, the committee develops course which, intuitively and based on their expertise, is likely to address the elements of the skill profile. The curriculum may be a single course or a set of course, organized in a logical sequential fashion. A variation of this model is the use of experts, meeting informally, to develop the skill profile while a subsequent group or groups validate the profile and develop the curriculum.

The DACUM method is the method used most often to quickly respond to new issues or problems where action is imperative and, even if the instruction is not exactly on target, it is better than existing approaches and, in the collective wisdom of the experts, is the most appropriate under the circumstances. This method is widely accepted and often used. It is similar to the informal and formal discussions and interviews describe in the previous section. While it may suffer from questions of reliability and validity, it may be the best, most appropriate method for the initial develop of a curriculum on any topic, serving as a starting point from which other, more rigorous methods may spring.

The Delphi Technique

The Delphi process is designed to provide the central or "true" answer to a question or issue. Originally developed by the RAND Corporation,[31] the Delphi Technique is a more formalized process than the DACUM model but retains many of the same elements. A panel of experts (Delphi Panel) is posed a set of questions, often through mailed questionnaires, regarding the future needs in a particular area. The responses are tabulated, grouped and assessed. The process is then repeated with refinements in the issues and questions, until consensus of the experts is attained. Once consensus is attained, the presumption is that the content is the best, from the standpoint of the experts. The Delphi approach is useful in model building and can form the basis for planning future activities, in addition to the development of a curriculum.

The Delphi method is generally expedient, inexpensive, easily understood, and versatile. It can be used wherever expert opinion is believed to exist. It has grown in popularity and has generally been accepted in the fields of education, criminal justice, business, and economics.

A major difference between the DACUM model and the Delphi Technique is the interaction of the experts. In the DACUM model, the experts can and often do discuss and debate the merits of various approaches. While this has the advantage of providing context and informing the next stages of discussion and decisions, it may also bias the results. Dominant or aggressive experts may prevail, even though the basis of their arguments may not be the most compelling. The Delphi Technique keeps separate the experts and only the substance, not the emotion, of their comments and suggestions is evaluated and rated.

This technique is a strong one for predicting future events, needs, or actions but is only as valid as

the presumptions and caveats of the experts. Within the law enforcement arena, the Delphi Technique has been used to predict future needs of police, based on economic, social and demographic, and political variables.[32] As these variables change, as political powers come into or go out of office for example, the validity of the predictions changes. The same is true of a curriculum developed through a Delphi Technique.

Critical Incident Technique

Although this approach appears to be based on some catastrophic event, it frequently is used to identify any skill or performance deficit. In its broadest sense, the Critical Incident Technique responds to the question, What do professionals need to know in order to respond better to an activity or incident? Often supervisors or managers within an organization or group are asked to complete a "Critical Incident Form" on all incidents or situations they can remember that are associated with the type of activity under consideration. These supervisors or managers are not asked to anticipate the future (as experts are often asked to do) but to recollect past events and comment on things the worker did or did not do that could be considered a failure or flaw. These behaviors or activities then represent the universe of actions which need to be corrected through instruction. The activities are grouped and prioritized then incorporated into instruction.

This process has a high level of validity, since it is based on past events and observed behavior, but is still subject of errors of interpretation. Additionally, the supervisors or managers may not be aware of all flaws or deficits. When activities involve multiple professions or occupations, there is little opportunity to have comments which address panoramic problems or flaws or to prioritize the various activities.

Task Analysis Approach

Although the Task Analysis is discussed in the previous section on "Needs Assessment," it is an often-cited approach to determining content of curriculum, not simply the need for a curriculum. In this section, the discussion is limited to content determination applications of Task Analysis.

A task may be the comprehensive body of activities of a profession or occupation or it may be the limited and focused activity associated with a particular function or situation. Task Analysis "can be viewed as an assessment of the specific 'tasks' that need to be performed to appropriately deal with the problem."[33] The "problem" may be an isolated incident or situation which requires particular skills or abilities. The analysis requires complete and comprehensive identification of all activities or tasks associated with the incident or situation. Following the listing of activities or tasks, typically veteran professionals responsible for doing that or similar activities or tasks are asked to validate the list or "inventory" and may indicate the frequency or criticality of the item or task. The result is an inventory of activities or tasks which need to be included in instructing workers on the accomplishment of the problem or training for an occupation. The advantage of this approach is the systematic and quasi-scientific methodology used, suggesting generalizability, reliability and validity. The process is frequently a long one and the effectiveness is determined by the comprehensiveness of the inventory. Task Analysis is often used for entry-level instruction and not for specialty in-service activities however it is unparalleled in its comprehensiveness.

Methods of Determining Curricular Content

Objective (Bloom's Level of Cognition)	DACUM	Delphi	Critical Incident	Task Analysis
Knowledge	XX	XXX	XXX	XXXX
Knowledge of Specifics	XX	XXX	XXX	XXXX
Knowledge - ways to deal with Specifics	XX	XXX	XXX	XXXX
Knowledge of Principles and theories	X	XXX	XXX	XXXX
Comprehension	X	XXX	XXX	XXXX
Translation	X	XXX	XXX	XXXX
Interpretation	X	XXX	XXX	XXXX
Extrapolation	X	XXX	XXX	XXXX
Application	x	X	XXX	XXXX
Analysis	x	X	XX	XXX
Analysis of Elements	x	X	XX	XXX
Analysis of Relationships	x	X	XX	XXX
Analysis of Organizational principles	x	X	XX	XXX
Synthesis	x	X		XX
Evaluation	x	X		XX

X's indicate the perceived strength of the approach at the level of cognition

Models of Instruction

Curricular content is determined by a number of issues, not the least of which is the anticipated model to be used in the instruction. The fields of education and instruction are awash with models and examples of instruction and education. For our purposes, we will focus only on three models which have face validity and which appear to address the types of instruction appropriate to training. The three models discussed here are the Update Model, Competency-based Instruction and Performance-based Instruction.

Update Model

The simplest, most obvious model for professional instruction and training is the Update Model. Under this model, there exists new developments in a field or profession for which a practitioner needs to be updated in order to remain current. This model is the basis for continuing professional education in many fields of practice, including law, medicine, nursing, dentistry, architecture, pharmacy, law enforcement, and many others. The continuing education may be self-directed or directed by the profession. The objective is simple - transfer information through exposure to new approaches or new ideas. This type of instruction is almost always associated with the lower levels of the taxonomy of educational objectives where knowledge, and perhaps comprehension are the objectives. The application of the information is assumed to be self-motivated, as appropriate. It may well be that all of the information provided in the Update Model is not useful to the practitioner or professional. The assumption is that they will utilize that which is appropriate and store away that which is not currently useful or needed.

Legal updates in law enforcement serve as a good example of this model. Many states have continuing education expectations, or "in-service" training requirements for law enforcement. Some

states provide loose guidelines for that training but some mandate that legal updates be a core element representing up to 20 percent of the mandatory training. The legal updates will be useful to some and not useful to others but the information is deemed important enough that all be exposed to the new data.

This model suggests selectivity among the courses offered and those chosen by the professionals. As some point out, "keeping professionals and business people up to date is a means, not an end in itself. When the educator chooses among possible updates to offer, and when the learner selects one update opportunity rather than another, there are criteria at play that carry each well beyond considerations of simply keeping up to date."[34] With this model, courses can be designed quickly and, if modifications need to occur, it will become obvious. To some degree, the demand for courses governs the offerings so there is an assumption that the profession and the professionals know what they need, within limitations, and will select accordingly. Errors in the courses or the content are less egregious since the audience is broad-based and the information is less complex.

Competency-based Instruction

Competency-based instruction is a more recent development and is directed more toward the delivery of a service or skill. "Competence includes a broad range of knowledge, attitudes, and observable patterns [of] behavior which together account for the ability to deliver a specified professional service."[35] This method of educating or instructing has frequently been used in the development of medical curricula. A key general consideration in this approach is the determination of the elements which represent competence in each stage of abilities. These elements represent the specific learning objectives for each course and each program of training. "Generally accepted definitions of competence refer to both the presence of characteristics or the absence of disabilities that render a person fit, or qualified, to perform a specific task or to assume a defined role."[36]

Just as competency is the core element of competency-based instruction, courses, information and materials are included only if they contribute to the development of an individual's competence.[37] Competence must be defined, criteria established, assessment of competence determined and progress charted.

McGaghie[38] suggests that the methods for establishing competence levels are: self-reports by the practitioners, observation by peers, task analyses, critical incidents, and expert's opinions. These methods closely parallel those used in needs assessment and in curriculum development.

Others suggest more objective and quantitative measures of competence. These are, of course, more defensible based on reliability and validity. Competence in knowledge areas at the lower levels of the taxonomy of educational objectives would be judged simply by tests. Competence in areas at the upper levels would be proven by exercises or tasks. As Nowlen says, "competence understood as knowledge and skill is more easily investigated and defined by research" while "richer concepts of competence has to receive more careful attention."[39] Competence-based instruction is individualistic in its focus and its assessment. Competence is assumed to be based on individual criteria which, in many instances, is correct. Some activities require collective work and that suggests another model of instruction and curricula, the performance-based model.

Competency-based instruction, for all of its virtues, does not address all issues. It is most consistent with individualized instruction. Competency, as used in the literature, is primarily an individuals level of activity, at or above an established standard. For group activities, Performance-based Instruction is preferred. The following matrix suggests the purposes of training, by methods of instruction:

Purposes and Methods of Instruction

Purpose of Training	Update Method	Competency-Based	Performance-Based
Mass Awareness and Information	Preferred		
Develop Individual Knowledge, Skills, Abilities	Appropriate In-service	Preferred - Individual Training	Preferred - Group Training
Develop Group Abilities, Skills,			Preferred - Group

Many of the activities in a professional setting are group activities. It is important, therefore, to address the preferred method of group expertise, Performance-based Instruction.

Performance-based Instruction

Another relatively new approach to continuing education and adult education is "performance model" or performance-based instruction. Under this model, performance criteria are established. These criteria are usually based on a proven need or deficit. The difference the learning activity is expected to make in the individual, the activity or the organization is the performance criteria. Performance-based instruction serves as a model for performance-based standards.[40] It is not, however, strictly based on individual performance. "Performance is a function of both individuals and ensembles. Even as an individual matter, performance is the result of interacting social and personal influences."

A very structured approach to performance-based instruction design (PBID) is provided by Pucel.[41] Under this structure, there are seven components: program description, content analysis, content selection, content sequencing, lesson structuring, lesson delivery formatting, and evaluation and feedback procedures. This model allows the development of courses which are simple or complex, individualized or group/organizational exercises, delivered using traditional, modularized, programmed or computerized instruction, and have all of the elements of feedback and revision. It is critical, under this model, to establish course content by functions, by behaviors, and by processes. Objectives are developed and are to be based on performance. While this is the most versatile of the models, it is also the most rigorous and structured in its development.

Models of Training

Objective (Bloom's Level of Cognition)	Update	Competency	Performance
Knowledge	XXX	XXXX	XXXX
Knowledge of Specifics	XXX	XXXX	XXXX
Knowledge of ways to deal with Specifics	XX	XXXX	XXXX

Knowledge of Principles and theories	XX	XXXX	XXXX
Comprehension	X	XXXX	XXXX
Translation	X	XXXX	XXXX
Interpretation	X	XXXX	XXXX
Extrapolation	X	XX	XX
Application		XXX	XXX
Analysis		XXX	XXX
Analysis of Elements		XXX	XXX
Analysis of Relationships		XXX	XXX
Analysis of Organizational principles		XXX	XXX
Synthesis		XXX	XXX
Evaluation		XXX	XXX

X's indicate the perceived strength of the approach at the level of cognition

An interesting application of performance-based training is in the field of law enforcement. Thermer states "simply attending a class and receiving a certificate does not demonstrate learning or satisfactory performance."[42] He points out that "as a performance-based occupation, law enforcement can implement a measurable and valid performance-based system of assessment and unite that with the high standards traditional in law enforcement training." This article focuses on the assessment portions of training but suggests that a valid assess, which is performance-based, will drive the curriculum and the training, making it more appropriate to the field. The process of assessment requires instructors to develop task-oriented, performance measures, in order to evaluate trainees. Ultimately the "portfolio method" of assessment was developed. This method, however, required a framework for "competency" in the accomplishment of tasks. Whether this approach is called "performance-based" or "competency-based" it still represents a valuable effort to develop and apply standards of outcome to instruction. These standards, help to fashion decisions about curricular content as well as assessment decisions.

Whatever the terminology employed, training curricula must consider issues such as essential skills or minimal competencies to be accomplished at various stages in the curriculum process. These issues go to the core of the relevancy of the instruction. If there are no objectives, there can be no confidence in the relevance.

Making Decisions in Curriculum

As the preceding discussions indicate, a training curriculum can be developed using any of several approaches. It can be developed in the *abstract* or it can be developed based on an assessment *current knowledge* including projections of *current and future needs.* Abstract development is the least reliable and valid of the approaches. It may be the necessary approach if curricula must be developed in an entirely new area of inquiry, devoid of knowledge and information. To use this approach when information is available but not being utilized or considered is irresponsible curriculum planning. It would be somewhat arrogant for any agency to assert that it knows what training is needed and for whom, without regard for the needs, gaps and capacities of the persons and agencies receiving the training. We believe that such an approach would be recognized by the recipient as indefensible, therefore shunned or certainly not embraced.

The assessment of current knowledge, current needs, and future needs represents the appropriate predicate for a viable training initiative. This assessment is essential for the development of a valid curriculum on a subject.

As is true of any decision-making process, there are many elements which must be considered. Three basic elements to be considered are: constraints, implications, and needs.

Constraints

Time and resources are two of the key constraints which are most often of concern. If decisions on curricular content must be made quickly due to the criticality of the subject or the demands by professionals, the models used to determine curricular content which are responsive to quick determination are the ones most likely to be employed. These models may help to guide the decision-maker in leaning toward or away from certain elements of the curriculum.

Resources, most frequently funding for an activity, certainly influences which training can and should occur. Again, the decision-maker, as a responsible administrator of resources, must sometimes compromise ideal strategies in consideration of constraints.

Implications

The criticality of issues and training along with the effects of potential mistakes, represent important considerations in selecting curricula. Just as triage is necessary in emergency health care, the identification of the most serious and most important issues should guide the selection of training content. Similarly, the implications of mistakes - including erroneous material or failing to include important material - must be considered. These Type I and Type II errors (Type I error is an error of inclusion while a Type II error is one of erroneous exclusion) can affect both quality and resources. The more critical the issue, the better it is to risk a Type I error and include material that is not germane rather than exclude material that is later found to have been important.

As curricula are evaluated, refined, and revised, the likelihood of errors decreases.

Needs

Curriculum development is a continuous process. Just as curricular content may be determined through a variety of processes, some complex and some simple, the continuing needs of the curricula may be determined using the same processes.

Below are two approaches described earlier which can be used to make decisions associated with training programs and curriculum:

> *Rational Process*. If there is insufficient time or insufficient information on which to proceed but it is essential to proceed quickly, a rational approach, informed by experts on the subject, may be the most viable method to use to make key decisions on the inclusion of information in a curriculum. This method, however, should be restricted to the initial

approaches and not the revision and continued development of the curricula. If the experts on the subject are sufficiently knowledgeable, representative, unbiased, and articulate, the initial curricula should be appropriate and valid. This method is an established one in the development of curricula in training and education. It relies upon the strength of those experts who recommend and design the elements, based on their intuitive and experiential views of needs and gaps.

Assessment Process. The assessment of constraints, implications, needs and gaps, using proper methodology, can serve as the most defensible method of deciding on any curricula. What is suggested here is a general assessment, based on the dimensions described above, of a functional category, not an assessment of specific agencies. Sometimes the clientele or "end-users" are asked to respond to structured (sometimes unstructured but focused) questions regarding their needs and gaps. The curricula, if based on this method, are insured to be responsive to the perceived needs of those receiving the instruction. Subject-matter experts still have a key role to play in this method of curriculum development. The questions must be asked in ways that are performance-based, not terminology based. The responses must also be representative of the groups being surveyed (survey is used in the generic sense here and does not restrict the enquiry).

The "assessment process" can be used in concert with or subsequent to the "rational process" mentioned above. An initial curricula, lesson plan, syllabus, or technique may be based on a "rational process" and subsequent curricula, plans, syllabi, or techniques based on the more reliable, valid, and defensible "assessment process."

Another method incorporating the two would be a "generic" curriculum designed to inform the clientele of the subject so that the subsequent assessment would be more likely to identify the issues associated with the topic. This would be particularly useful in esoteric areas where it is likely that the clientele "does not know what they do not know" and, therefore, could not respond precisely to the issues. It would be essential, however, to follow the generic curriculum with an assessment to determine the most appropriate instruction to be offered subsequently.

Method of Delivery

To demonstrate the centrality of educational objectives, the following table is extracted from information provided by Kern, et al.[43] It provides us with a description of the most appropriate methods of delivery, based on the type or category of the learning objectives and the domains in which they are present:

Instructional Methods	**Type of Objective**				
	Cognitive: Low	Cognitive: High	Affective	Psychomotor: Competence	Psychomotor: Performance
Readings/Video	XXX	X	X	X	
Lecture	XXX	X	X	X	
Discussion	XX	XX	XXX	X	X
Problem-solving exercises	XX	XXX	X		X
Programmed learning	XXX	XX		X	
Learning projects	XXX	XXX	X	X	X
Role projects		X	XX	X	XX
Demonstration	X	X	X	XX	XX
Real-life experiences	X	XX	XX	XXX	XXX
Simulated experiences	X	XX	XX	XXX	X
Video review	X			XXX	X

In this table, the instructional methods can be described as:

Readings/Video - Learner in a passive role.
Lecture - Learner in passive role, information able to be verbalized.
Discussion - Learner in a more active role, feedback immediate.
Problem-solving exercises - Active learning with problem solving skills reinforced.
Programmed learning - Material organized and presented in sequential, modular fashion.
Learning projects- Active, self-paced, ipsative, may involve simulations, involves problem-solving, applications.
Role projects - Appropriate for psychomotor skills, experience different roles.
Demonstration - Passive learning for more complex skills, psychomotor especially.
Real-life experiences - Necessary to understand, appreciate, experience - affective and psychomotor.
Simulated experiences - Evaluative as well as training.
Video review - Evaluation, reassessment, repeat.

The difference in psychomotor competence and psychomotor performance methods are associated with “demonstrated”or formative competence and “proven” or summative performance.

There are as many methods of delivering training as there are methods of communicating. The most appropriate methods again vary by function, anticipated performance, jurisdictional imperatives and, to a lesser degree, incident type. While this topic will be considered in its entirety in a subsequent chapter, some of the locales appropriate for training are:

> *Central Location Training*: Some training courses are best offered in central locations. The reasons for transporting participants to central or regional locations can include issues such as models, rare equipment, instructional continuity, and the like. The important issue to remember is the centrality of the educational objective. It should guide the selection of the material and the selection of the most appropriate location for the dissemination of information. The more complex and technical the instruction, typically, the more likely it will be delivered in a specially suited environment. This environment may well be a centralized location. Another consideration is the heterogeneity of the participants. If economies of scale do not suggest on-site training, they may suggest centralized facility training.
>
> *On-site Training*. This traditional method could be offered at agency-specific locations, jurisdiction-specific locations, or regionally. Traditional methods are most appropriate for many clientele but time and travel restrictions may limit the audience.
>
> *TV/Video Instruction*. Many agencies and clientele would find it difficult if not impossible to attend training sessions of sufficient length to address the issues but could best utilize structured training. Capsulized training or instructional vignettes may be most appropriate for some audiences, depending on the sensitivity of the topic and the information.
>
> *Computer-based Instruction*. This method may incorporate Internet instruction with the now established computer-based models for delivery of instruction to different audiences. This approach offers the most flexibility for the clientele.

Whatever the method or approach to the delivery of instruction, virtually all research and literature on the topic of instruction suggests that there be a reliable and valid assessment of the information assimilated by the participants. Exposure to information does not insure assimilation of information. Some instructional approaches may prove to be better than others in the transfer of information and the development of performance. Learning objectives and behavioral objectives, key elements of any syllabus, are hollow unless measured. Each instructional component, class, video, etc. should have an assessment of information understood and retained by the recipient. Tests may not be the best method of assessing the instructional impact and many other methods are available for consideration. Regardless of the method, the recipients’ ability to synthesize knowledge, skills and abilities is essential and should be measured to judge the impact, efficacy, and appropriateness of the instruction.

Approaches to Training Delivery

Objective (Bloom's Level of Cognition)	Centralized	On-site	TV/Video	Computer
Knowledge	XX	XX	XXX	XX
Knowledge of Specifics	XX	XX	XXX	XX
Knowledge - ways to deal with Specifics	XX	XX	XX	XX
Knowledge of Principles and theories	XX	XX	XX	XX
Comprehension	XX	XX		XX
Translation	XX	XX		XX
Interpretation	XX	XX		XX
Extrapolation	XX	XX		X
Application	XX	XXX		X
Analysis	XX	XX		X
Analysis of Elements	XX	XX		X
Analysis of Relationships	XX	XX		X
Analysis of Organizational principles	XX	XX		X
Synthesis	XX	XX		
Evaluation	X	XX		

Curricula, to be defensible, appropriate, and valid, must consider the elements listed above. This consideration is typically included in a needs assessment which identifies the gaps associated with each element. Gaps are the focus of training because it is not productive to provide training on existing capabilities, unless they are to be revised and altered or applied differently.

Linking Courses into a Curriculum

This step in the process is actually a culmination and synthesis of the other steps. Once the training objectives have been determined, both globally and specifically, using both terminal and enabling objectives, courses are developed to meet the objectives. Logic and expertise have a great deal to do with the linking of courses but perhaps the most important criteria rest in performance and competence standards. In these standards are developed, along with measurable criteria for assessing them, the curriculum should become more evident. Some courses will be prerequisites for others. Typically the progression of courses will be consistent with the progression along Bloom's Taxonomy. These educational objectives, progressing from the simple to the complex cognitive skills, represent the compass for a curriculum. Typically, the steps in the classification can be considered building blocks. The identification of standards for each of the courses allows potential participants to determine the level at which they should enter the curriculum, based on their prior training, knowledge, skills and abilities. Linking courses into a curriculum is verification that the process has objectives and that the objectives can be ordered.

Revising and Evaluating Training

Regardless of the care taken in the development of curricula, it is necessary to evaluate the content and methods of instruction as well as the persons and organizations delivering the instruction. The

evaluations, to be beyond reproach, should be developed and analyzed by individuals and groups independent of the instructional process. The primary objective in evaluating the instruction is to identify needs, gaps, and capacities being met by the curricula and those which are not being met. Another objective is to verify or validate the instructional process, including the method of delivery as well as the persons and organizations delivering the instruction. Of course, a parallel purpose for evaluation is to certify the knowledge, skills, and abilities attained by the participant in the training process. Sponsoring agencies may see this purpose as the central one but our task here is to address the curricular concerns.

Revisions of curricula should be based on the analysis of the evaluations. Continuation of instructors and instructional organizations should be supported by the analysis of participants' reviews of the method, style, and quality of the instruction. Several models of "student evaluations" are available from most universities. These instruments evaluate the quality, impact, and utility of instruction through a series of core questions and other questions which may be selected by the instructor.

The process used to assess the needs and the development of the curriculum should be replicated periodically to verify, validate and revise the educational objectives of each course and the entire curriculum. Evaluation is a feedback loop which informs the earliest stages of the curricular process, a process which is on-going and continuous. Evaluation becomes a process which has been described as a "cycle within a cycle."[44] Specific participant's performance evaluation may be norm-referenced (each participant compared to other participants) or it may be criteria-referenced (standards or criteria exist against which the performance is assessed). Clearly the criteria-referenced approach is preferred for curricular development, assessment and revision. Standards may, however, be evolving in certain disciplines and for certain topics. Through the assessment and evaluation of performance, curricula are assessed and standards emerge which can be applied to next-generation participants.

One of the keys to an appropriate and successful evaluation of a course or a curriculum is the setting of objectives. "Educational literature has provided us a model that states objectives should be set at the outset in planning continuing education programs. … objectives should be set in behavioral terms: what the learner should be able to say or do upon successful completion of the program. Evaluation of the program and participants should be based on accomplishment of the objectives."[45] Phillips[46] rejects the frequently-stated myth that training programs cannot be evaluated, stating that they can and they must be evaluated. He provides several models or approaches to evaluation, one of which is Kirkpatrick's Four Levels of Evaluation:

Level	Question
Reaction	Were the participants pleased with the program?
Learning	What did the participants learn in the program?
Behavior	Did the participants change their behavior based on what was learned?
Results	Did the change in behavior positively affect the organization?

Educational objectives, particularly Bloom's taxonomy, provide insight into the development of objectives and the appropriate methods of evaluating the learning. Pretest, posttest methodologies

can be used to fashion evaluations on the behavioral implications and the outcome or results.

Evaluating the instruction can lead to better instruction. Evaluating the course or program can lead to better courses and programs. Evaluating the learner can lead to standards and measures of competency or performance which can anchor the initiative, give it credibility and durability, and produce a discipline or paradigm. To do anything less suggests that the initiative is temporary and not worthy of serious training.

Summary

This section has accumulated prominent and current literature on the topic of curriculum development. As is evident, there is no "standard" approach to the development of a curriculum, the approach is dependant upon a number of issues. An effort has been made to articulate the issues, define the approaches, and provide matrices to focus the matching of approaches to objectives.

Key to the development of an appropriate training initiative is the development of training objectives. What is presented here is the most widely accepted classification of educational objectives, Bloom's *Taxonomy of Educational Objectives*. This classification guides the selection of training content, methods of instruction and methods of evaluation.

Several methods for determining curricular content are described. All are appropriate and viable, depending upon the instructional model and the decision-making elements. The DACUM approach is one used most frequently during the early stages of a training initiative. As the initiative matures, other approaches such as the Delphi method and Task Analysis method are appropriate for strategic development of training programs.

Again, depending upon the training objectives, it is important to define the training approach as "update," "competency-based," or "performance-based." This determination may vary by course and by audience but it may be one of the most important ones in the development of a curriculum. Competency-based training is more individualized and can easily lead to standards and expectations, by function and by level. Performance-based training is more appropriate for group activities and it, too, can lead to standards and expectations, against which performance can be measured.

Evaluation methods are dependant upon educational objective, level of instruction and type of training. Nonetheless, evaluation is critical and necessary. It is necessary to determine competence, performance and the need for and direction of revision of training courses, curricula, and programs.

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Chapter 5
Training Delivery Methods

Chapter 5 Outline
Training Delivery Methods
- *Introduction*
- *Integration of Courses*
- *School-based Learning*
- *Work-based Learning*
- *Training Environs*
- *Individualized Instruction*
- *Group Instruction*
- *Description of Instructional Delivery Methods*
- *Non-Outcome-Based Instruction versus Outcome-Based Instruction*
- *Summary*

Introduction

The delivery of properly prepared training and education can be quite simple or extraordinarily complex. The type of material being taught determines, to a great degree, the method of delivery. This chapter will address individualized instructional approaches as well as group training methods, including technology-based training in both categories.

Delivery methods have sometimes been grouped under the general heading "Implementing the Curriculum." The elements and criteria included in implementing a curriculum are generally broader than those in simply determining the delivery method. Prior to addressing the delivery methods and in an effort to accommodate the topic comprehensively, we will first address the issues which must be considered in implementing a properly developed curriculum.

Integration of Courses

The first key decision in the sequencing of courses is the determination of core courses, skills, knowledge or abilities. If they are "core" then, by definition, they should be shared by all participants. The integration of courses in a curriculum conform perfectly to the "Curriculum Spiral" described earlier. Because we have discussed that topic thoroughly, we will not replicate it here other than to advise that it must be a consideration in the delivery of courses in a curriculum. There must be a continuity of courses such that the prerequisites are made available first and the specialized courses or skills available later. "Expert Bypass" is the proposition that "trainees demonstrating competence before an instructional module are allowed to skip it" (See, for example, Mallory and Steele[1] in Kelly's book[2]). Clearly this sequencing suggests that there are definable and testable competencies for particular skills and skill levels.

School-based Learning

The historically dominant method of instruction in the United States in the past century has been the

school-based experience. This necessitates student or participant travel to the facility for instruction. This facility may be call a laboratory, college, center, or simply school. It presumes that it is more expedient for participants to travel to a centralized location for training, education and study than for the instruction to be provided at the work-site. Community colleges, technical schools, and vocational schools have taken the traditional concept of centralized instruction and melded it slightly by making the instruction centralized but more accessible. The rationale for school-based or centralized learning experiences rests with either efficiency or effectiveness.

It would be grossly inefficient for instruction to be transported to each individual trainee or learner, unless the trainee's time were more valuable than the instructors or there were travel limitations on the trainee. If there are individual trainees, seeking similar instruction, who are reasonably mobile, it is generally more efficient to require that they travel to a central location for the instruction. This historical rule-of-thumb is reinforced if there are idiosyncracies regarding the facility, such as instructional materials, library, media materials, or specialized equipment which make it in-expedient to transport the training to the general area of the trainee. In these instances there could well be one centralized facility for specialized instruction which could not be replicated elsewhere.

A hybrid or compromise to the centralized facility model but still in keeping with the school-based instruction, is that exemplified by vocational schools, community colleges, and technical schools, which have branched into relatively remote areas and communities. These provide greater accessibility without too much compromise of the advantageous facilities for learning.

Within the training environment, it is not unusual for training to be regionalized when materials can be transported less expensively than transporting all of the diverse trainees who might attend. Hotels, conference centers, and other meeting facilities can serve as school-based instructional platforms, particularly if the instruction is primarily lecture or presentation of materials. When demonstrations or specialized, immobile equipment or materials are necessary for the instruction, it is necessary that the school-based instruction be held at a particular facility and a compromise would affect the quality or content of the instruction.

Work-based Learning

In spite of the historical precedent of school-based instruction, more technical and skills training courses are conducted in the work-place. This appears to be the venue for the most realistic experiences the participant can have if the skills learned are to be applied in the workplace. Work-based learning has distinct advantages, even for traditional college or university students.[3] For technical and skills training, work-based instruction again rests on the determination of efficiency and effectiveness. If there are sufficient numbers of participants who need or desire the instruction, it may be feasible for the instructional unit, including instructor and materials, to travel to the work-site. Clearly this is advantageous to the trainees since they are inconvenienced the least. In this instance, it would be more *efficient* to provide work-based instruction.

Efficiency is not the prime consideration, however, in selecting work-based instruction. An artificial environment such as a school or even a training facility, may not provide the best, most realistic surroundings for training knowledge, skills, and abilities which must be operationalized in the

workplace. Granted, many agencies and organizations have attempted to replicate the workplace for training purposes. The U.S. Mine Safety Enforcement Administration has replicated a mine at the national training facility; the Federal Bureau of Investigation has replicated an urban setting for firearms training; the Federal Law Enforcement Training Center has utilized homes and other buildings for mock searches and crime-scene investigations instruction; and, Kentucky Fried Chicken headquarters has a fully operational KFC restaurant inside its management training facility, complete with and indoor drive-through, for training purposes. These are just some examples of the degree to which organizations go to replicate the workplace. The mere replication of the workplace implies the preference for that as the stage for training. In all but one of these examples, the issues involve safety of participants and bystanders. Clearly, there cannot be live-firing exercises in urban areas for the training of personnel. These examples do, however, point to the effectiveness of training in the workplace as the best opportunity to apply immediately the instruction received.

The most appropriate facility "is one that facilitates, rather than impedes, the achievement of the training objectives" (See, for example, West[4] and Kelly[5]). This comment, while obvious to the point of being a truism, suggests that it is important to again address the issue of instructional or learning objectives when addressing school-based (centralized) instruction, blended school-based (regionalized) instruction, or work-based (localized) instruction.

Training Environs

Objective (Bloom's Levels of Cognition)	Centralized	Regionalized	Localized
Knowledge	XXX	XXX	XXX
Knowledge of Specifics	XXX	XXX	XXX
Knowledge of ways to deal with Specifics	XX	XXX	XXX
Knowledge of Principles and theories	XX	XXX	XXX
Comprehension	X	XXX	XXX
Translation	X	XXX	XXX
Interpretation	X	XXX	XXX
Extrapolation	X	X	XX
Application	XXX	XX	XXX
Analysis	XXX	XX	XXX
Analysis of Elements	XXX	XX	XXX
Analysis of Relationships	XXX	XX	XXX
Analysis of Organizational principles	XXX	XX	XXX
Synthesis	XXX	XX	XXX
Evaluation	XXX	XX	XXX

X's indicate the perceived strength of the approach at the level of cognition

This matrix does not capture the nuances and issues inherent in each training location. As stated above, specialized equipment, advantageous support services such as library, information, or a variety of experiences as well as the sensitivity of the training, may necessitate or negate certain

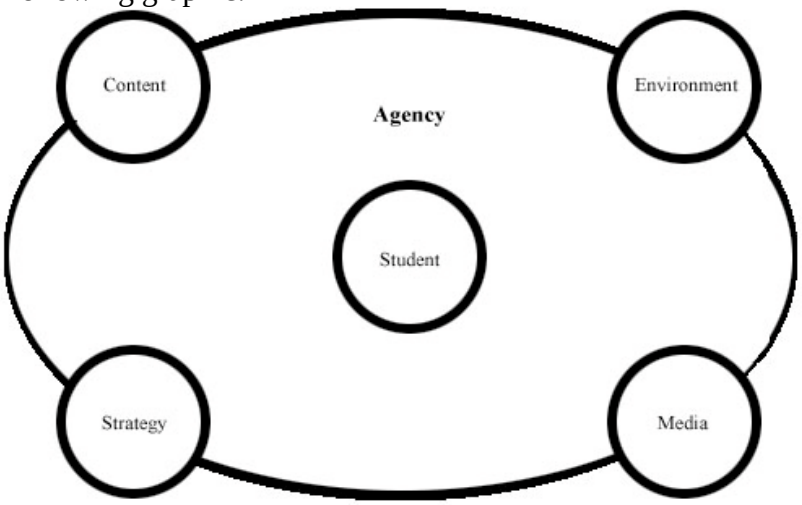
locations or facilities. Generally, the more general the training, such as within the category of "Knowledge," the less important it is where the training occurs, or, as we will see below, how the training occurs. It is generally better, however, for work-related training to occur in the circumstances and surroundings most like the work environment, which, in most cases, is the work-site.

Individualized Instruction

As with every other topic related to curriculum development and delivery, individualized instruction is complex and requires that several components be address simultaneously. The five components associated with individualized instruction according to Finch and Crunkilton[6] are:

- student
- instructional content
- instructional media
- instructional strategies
- instructional environments

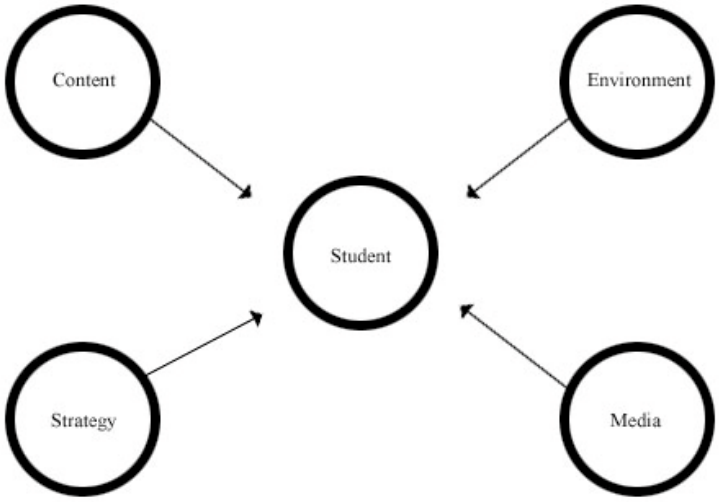
According to Finch and Crunkilton, the organization of the components revolve around the student, as shown in the following graphic.



Individualized instruction, as the name suggests, seeks to accommodate the specific needs of the individual student and provide "whatever arrangements are necessary to ensure that each student will be constantly engaged in learning those things that are of greatest value to himself or herself."[7] Such an approach is instruction-intensive and presumes that the purpose of instruction is to augment the *individual's* abilities.

This is in contrast to a group learning experience or the delivery of instruction at the request of or to benefit an organization where the objective is to enhance individual performance as it relates to a group, team or organization. Typically individualized instruction may be preferable but unrealistic. Hybrids of this approach use diagnostic tools to determine each individual's progress and stage so that the instruction can accommodate the individual but within the organizational exigencies.

The model presented below depicts a process of determining the content of a curriculum or course, the strategy to be used in the delivery of the content, the media most appropriate, and the instructional environment, all within the context of the agency or organization. This model changes the dynamics of the instruction significantly because it makes central the agency or organization, not the participant. This model is more appropriate for contract training than for traditional education.



In this graphic, the student is still the central element for instruction but the context is one of agency or organizational imperatives.

Individualized instruction is an extremely valuable educational model of delivery. Reynolds provides us with more than simply the centrality of the learner in his definition of "Individualized Instruction:"

> An instructional technique in which the instruction is designed to be used by individual learners. The learner is taught only the material that is not already known, instead of taught everything in a specified curriculum as is true of traditional instruction. This is more than learners simply working on materials without regard to the activities of other learners in the same class. All individualized instruction is self-paced instruction. But not all self-paced instruction is individualized.[8]

It is clear from Reynolds' description that individualized instruction is always competency-based. The objective is to provide the individual with the knowledge, skills, and abilities needed to do the job specified.

Since individualized instruction is competency-based and self-paced, there are several delivery techniques which apply. Independent studies and self-directed instructional packages are very appropriate. Additionally, technology based training is amenable to individualized training.

Computer-assisted instruction is an effective approach in delivering individualized instruction. It is, however, only one medium for the delivery of training.

Description of Instructional Delivery Methods

As mentioned earlier, there are as many methods of delivering training as there are methods of communicating. Since the most appropriate methods vary by function, anticipated performance, jurisdictional imperatives, learning objectives, and resources, it is not possible to provide a prescription for the correct method to use. Some of the approaches introduced earlier but restated here with greater clarity are:

> *Central Location Training*: Some training courses are best offered in central locations. The reasons for transporting participants to central or regional locations can include issues such as models, rare equipment, instructional continuity, and the like. The important issue to remember is the centrality of the educational objective. It should guide the selection of the material and the selection of the most appropriate location for the dissemination of information. The more complex and technical the instruction, typically, the more likely it should be delivered in a specially suited environment. This environment may well be a centralized location or it could be that the more appropriately suited environment for complex training is the "work-site" since that is the location of the most realistic applications. As mentioned below when addressing computer-assisted instruction, "fidelity" or complexity of the information becomes an issue in determining if training should be centralized or decentralized. Another consideration is the heterogeneity of the participants.

If economies of scale do not allow on-site training, they may suggest centralized facility training. Previously labeled "school-site" training, centralized instruction is the traditional method of instruction and, with traditional educational objectives, it is the default method. With professional training, it is often the secondary, rather than the primary method, since the work-site is the location for the training to be applied. Educational objectives at the highest levels of the taxonomy are appropriate for this type of "work-site" instruction.

> *On-site Training or Work-site Training*. This traditional method of professional training could be offered at agency-specific locations, jurisdiction-specific locations, or regionally (although it becomes more like central location or school-site instruction if regionalized facilities are selected in order to reduce participant costs and not for the purpose of taking advantage of certain localized equipment or facilities). This is, arguably and with all other things being equal, the most appropriate training location for professional training, particularly that which is skill-oriented, and linked to variances in equipment or logistical support. "Work-site" training carries with it the *exact* conditions under which the participant must work when and if it is necessary to employ the information or activities learned. With traditional educational objectives, this is the secondary method or location of delivery but with professional training, it is frequently the primary or default method and location. Mitigating factors include the presence or absence of conflicting and complicating variables. Educational objectives at the highest levels of the taxonomy are appropriate for this type of "work-site" instruction.
>
> *TV/Video Instruction*. Many agencies and clientele would find it difficult if not

impossible to attend training sessions of sufficient length to address complex issues. Similarly, there may be too few participants at a single location to merit work-site training but there are those who could utilize structured training. Passive, capsulized training or instructional vignettes may be appropriate for some audiences, depending on the sensitivity of the topic and the information. This information and instruction may be disseminated through television or video. This medium is well suited for update training and non-complex, awareness instruction.

Televised instruction can easily be interactive and distance learning initiatives are developing quickly in every field of education. This moves the instruction from entirely passive to more of an active or participatory endeavor. No matter how interactive the process, there is still an element of artificiality which may adversely impact some instruction in the higher levels of educational objectives in the cognitive and psychomotor domains. This delivery method may be quite effective in the dissemination of information to large audiences, in varied or remote locations, when the information is at the lower levels of the taxonomies of educational objectives.

Computer-based Instruction. This method may incorporate Internet instruction with the now established computer-based models for delivery of instruction to different audiences. This approach offers the most flexibility for the clientele. Reynolds provides us with six modes during which computer-based instruction may be appropriate:

- Tutorial
- Drill and Practice
- Instructional Game
- Modeling
- Simulation
- Problem Solving

The typical tutorial session may provide the learner with information, refresh the learning of the information through prompts, and then check the understanding of the information through self-paced testing. The result is a reinforcement of the learning of information as well as an instant assessment of the learning. The merit of computer-based instruction, as used here, is its role in the instructional process. The tutorial function is a mildly active, not passive, system for instilling information and insight and then reinforcing the information.

Drill and practice is a variation on the reinforcement process. Through repetition and immediate feedback, the learner reinforces correct information and does not develop pathways for incorrect information. This, along with the "tutorial" sessions, are good practice for learning terminology or specific information, again, at the lower levels of the taxonomy of educational objectives.

Instructional games, as an instructional technique, as pointed out by Reynolds "does not mean frivolous activity."[9] Rather, it is a programed method of accomplishing the learning objectives in an organized fashion which uses scenarios as methods of stimulating learning through following rules to overcome barriers or problems. This method is effective in practicing step-by-step processes but still carries an element of artificiality.

Modeling is "the use of the technology-based system to represent another system or process" which is likely to be quasi-realistic in its assumptions and characteristics but still represents a fictitious example.[10]

Simulation, as used in computer-assisted instruction, is the use of a fictitious but representative situation or device which has a high degree of fidelity to provide practice for the learner. It is a method of applying the information or processes learned, again with immediate feedback, to reinforce (or alter) the learning. Live simulation will be described in the next chapter as a means, arguably the most sophisticated means, of evaluating processes, but here it is used as a method of computer-based instruction to teach and reinforce teaching. It is more of a process of "practice" than of training or teaching. Simulation presumes some base-line knowledge and, in most cases, complex knowledge. The simulation is an opportunity to practice that which has been learned. It is often assumed that high fidelity is better but that is not necessarily the case. The more complex the initiative, the more complex the simulation. "Fidelity" is often a term used to describe the complexity, not just the pixels of the display of the simulation. The clarity of the representation of the problem or dilemma addressed by the simulation is, of course, important. This is often called for in military simulations.[11]

Problem Solving has been one of the least useful applications of computer-assisted instruction. It seems counter-intuitive that a technologically advanced tool, like the computer, would not be perfectly suited to the higher levels of learning but that is not necessarily the case. Computer-assisted instruction is interactive, to a degree. There may be infinite possibilities in a problem or issue but only those methods that have been predicted and programmed are likely to be successful. This can be affected by the complexity of the program, the simplicity of the project or problem, and the limitations on innovation in dealing with the problem. Supporting the use of computers in complex instruction, however, is the development of programs that can learn as the participant presents it with new and unanticipated methods of responding to the problems. These "expert systems" are developing at a fast pace and may prove to be very effective.

It is clear that these methods of delivering individualized instruction are malleable and can be varied to meet the exigencies of the situations. One suggestion made in the literature is to tailor computer-assisted instruction into "computer-supported learning resources" especially for more complex tasks

and analyses or problem solving.[12] It should be warned, however, that computer-based instruction is generally a difficult medium for the training and education at the highest levels of the educational objectives. This is especially true where alternatives to action or responses are unlimited or where realism is important. Simulations are also limited. Within medicine, simulators are being used for surgery; within aviation, simulators have long been used to "train" pilots; and firearms simulators are being used to train and evaluate law enforcement officers in their judgement as well as skill. There is, of course, less risk of harm using computer models and simulations but there is also the assumption that basic or even complex knowledge, skill and ability is already present. The "simulators" are more for practice or evaluation than for initial training.

Whatever the method or approach to the delivery of instruction, virtually all research and literature on the topic of instruction suggests that there be a reliable and valid assessment of the information assimilated by the participants. Exposure to information does not insure assimilation of information. Some instructional approaches may prove to be better than others in the transfer of information and the development of performance. Learning objectives and behavioral objectives, key elements of any syllabus, are hollow unless measured. Each instructional component, class, video, etc. should have an assessment of information understood and retained by the recipient. Tests may not be the best method of assessing the instructional impact and many other methods are available for consideration, such as simulators described above. Regardless of the method, the recipients' ability to synthesize knowledge, skills and abilities is essential and should be measured to judge the impact, efficacy, and appropriateness of the instruction.

The matrix below captures some of the general tenets of the locale of individualized training.

Approaches to Individualized Training Delivery

Objective (Bloom's Levels of Cognition)	Centralized	On-site	TV/Video	Computer
Knowledge	XX	XX	XXX	XX
Knowledge of Specifics	XX	XX	XXX	XX
Knowledge - ways to deal with Specifics	XX	XX	XX	XX
Knowledge of Principles and theories	XX	XX	XX	XX
Comprehension	XX	XX		XX
Translation	XX	XX		XX
Interpretation	XX	XX		XX
Extrapolation	XX	XX		X
Application	XXX	XXX		x
Analysis	XX	XX		X
Analysis of Elements	XX	XX		X
Analysis of Relationships	XX	XX		X
Analysis of Organizational principles	XX	XX		X
Synthesis	XX	XX		
Evaluation	XX	XX		

X's indicate the perceived strength of the approach at the level of cognition

Curricula, to be defensible, appropriate, and valid, must consider the elements listed above. This consideration is typically included in a needs assessment which identifies the gaps associated with each element. Gaps are the focus of training because it is not productive to provide training on existing capabilities, unless they are to be revised and altered or applied differently.

Group Instruction

A viable alternative to individualized instruction, and one which is often preferred, is group instruction or training. Some of the concepts described above apply equally to group instruction and to individual instruction but here we will address the group training experiences, potential, advantages and disadvantages, as a delivery method.

Ruyle describes the advantages of group training:

> Group training, especially when using lecture and discussion methods, can be developed and delivered quickly to a large number of people. A competent trainer generates enthusiasm for the subject matter and can effectively coach learners, especially in psychomotor skills.[13]

Ruyle goes on to describe the "synergy" which can evolve from a group training session and experience. The following list clearly delineates the opportunities which appear to favor group instruction:

- Information must be conveyed to large number of people,
- Training must be developed and delivered quickly,
- A skilled instructor is available,
- Learners lack basic skills,
- Learners are not skilled in self-study and/or self-evaluation,
- Subject matter is particularly difficult to grasp without intervention from an instructor,
- Learners can be brought together in one place and on a set schedule for instruction, and,
- Complex psychomotor skills must be learned and practiced.[14]

Some of these items are consistent with "work-site" or localized training described under "Individualized Instruction" but here there is a recognition of the primacy of the group or team, not just some collection of individual learners who happen to be in the same area or even the same agency. The mention of a "skilled trainer" does not appear to suggest that when there is not a skilled trainer, individual training is more appropriate. It appears that the intention is to suggest a different type of skill involved when, for example, demonstrations are needed in order to give the learner the information and insight they need to perform properly.

While individual instruction might result in groups being able to perform together, the intention is to prepare the *individual* to perform a task or activity. Group training is most appropriate when the *group* is expected to perform together. The approaches adopted by the instructor to accommodate group instruction are:

- Lecture
- Discussion
- Demonstration
- Case Studies
- Role Playing
- Games (Simulations)

Each of these approaches have advantages and disadvantages, as described by Ruyle:

Lecture	*When to Use*: If efficiency is desired; if large amount of information is to be disseminated; if the audience is large; if information is "introductory" or if it is followed by instruction with greater depth; if flexibility is needed; if objective is to convey simple, straightforward facts. *When to Avoid*: If affective or psychomotor skills are being taught; if high level cognitive skills are being taught; if concepts are complex or detailed.
Discussion	*When to Use*: If lectures are to be enhanced; if group is small (20 or fewer); if instructional goals include critical thinking skills; if instructor needs to gain periodic feedback on learners' understanding and attitudes. *When to Avoid*: If participants have limited background on the subject; if content consists of clear, straight-forward principles and allows little variation.
Demonstration	("A dramatized explanation of a product, process or procedure") *When to Use*: If tasks require manual dexterity; if tasks are difficult to conceptualize; if the process of actions or procedures is important to represent in the instruction; if complex actions or procedures are being taught. *When to Avoid*: If the process is dangerous; if the process poses risk to the learner or the environment; if the information is so simple that an advanced demonstration would be inappropriate.
Case Study	(An event or circumstance which presents a problem to be solved or situation to be analyzed for instructional purposes") *When to Use*: If bridging theory and practice; if critical thinking skills are being taught; if application, analysis, and synthesis are objectives; if realism is important. *When to Avoid*: If learners do not have a good understanding of the rudiments of the topic or activity; if prerequisite skills are absent; if lower levels of the taxonomy or educational objectives are being taught - knowledge, understanding.
Role Playing	("A contrived event, situation, or circumstance acted out by trainees for instructional purposes" NOTE: This is consistent with Simulations and Games and will be collapsed into one category. Later we will refer to this amalgam as a form of Exercises) *When to Use*: If application of knowledge, skills and abilities is being sought; if management, supervision, and

interaction of events or circumstances is important; if sufficient time is available; if highest levels of educational objectives are being taught; if application of learned experiences and processes is important.
When to Avoid: If basic skills are not present; if training is at lower levels of taxonomy; if sufficient time is not available.[15]

The discussion of the methods and attributes of group methods of training fits the taxonomy precisely and many of these methods were described using the terms in the taxonomy:

Group Instruction Methods Applied to Educational Objectives

Objective (Bloom's Levels of Cognition)	Lecture	Discussion	Demonstration	Case Study	Role Play
Knowledge	XX				
Knowledge of Specifics	XX				
Knowledge-ways to deal w/Specifics	XX				
Knowledge of Principles and theories	XX				
Comprehension	X	XX	X		
Translation	X	XX	X		
Interpretation	X	XX	X		
Extrapolation	X	XX	X		
Application	x	XX	XX	X	X
Analysis		X	XX	X	XX
Analysis of Elements		X	XX	X	XX
Analysis of Relationships		X	XX	X	XX
Analysis of Organizational Principals		X	XX	X	XX
Synthesis			X	XX	XX
Evaluation			X	XX	XX

X's indicate the perceived strength of the approach at the level of cognition

Based on the prominent literature in curriculum development and delivery, it appears that for the training aimed at the higher levels of the educational objectives, it is critical that methods of delivery more sophisticated than lecture and discussion are appropriate. This is true of individualized instruction as well as group instruction but more critical for the later category than the former.

Consistent with the curriculum development discussion, the following table extracted from Kern,

et al[16] provides us with a description of the most appropriate methods of delivery, based on the type or category of the learning objectives and the domains in which they are present:

Instructional Methods	**Type of Objective**				
	Cognitive: Low	Cognitive: High	Affective	Psychomotor: Competence	Psychomotor: Performance
Readings/Video	XXX	X	X	X	
Lecture	XXX	X	X	X	
Discussion	XX	XX	XXX	X	X
Problem-solving exercises	XX	XXX	X		X
Programmed learning	XXX	XX		X	
Learning projects	XXX	XXX	X	X	X
Role projects		X	XX	X	XX
Demonstration	X	X	X	XX	XX
Real-life experiences	X	XX	XX	XXX	XXX
Simulated experiences	X	XX	XX	XXX	X
Video review	X			XXX	X

In this table, the instructional methods can be described as most appropriate if:

Readings/Video - Learner in a passive role.
Lecture - Learner in passive role, information able to be verbalized.
Discussion - Learner in a more active role, feedback immediate.
Problem-solving exercises - Active learning with problem solving skills reinforced.
Programmed learning - Material organized and presented in sequential, modular fashion.
Learning projects- Active, self-paced, ipsative, may involve simulations, involves problem-solving, applications.
Role projects - Appropriate for psychomotor skills, experience different roles.
Demonstration - Passive learning for more complex skills, psychomotor especially.

Real-life experiences -	Necessary to understand, appreciate, experience - affective and psychomotor.
Simulated experiences -	Evaluation as well as training is needed.
Video review -	Evaluation, reassessment, repetition are sought.

What is reinforced here is the utility of educational objectives in each of the domains continuing to play a central role in the determining the delivery of training.

Non-Outcome-Based Instruction versus Outcome-Based Instruction

The final consideration made in the delivery of the instruction is the expectation of outcome. While it would be logical that every instructional approach, medium, and technique would have an outcome if it is based on objectives, the issue here is whether the outcome is concrete enough to be identified and labeled. If so, it should fit into categories of:

- Generic or Non-specified Outcome Instruction
- Performance-based Instruction
- Competency-based Instruction

Those courses or curricula with no specified outcomes or expectations are sometimes referred to as generic or "foundational" instruction.[17] While it may seem ill-advised to construct such a curriculum or course, and it is contrary to most of the literature on curricular design, it may be appropriate at times to provide instruction to a broad array of persons but without articulated objectives other than insight or awareness. This type of course might fit within the affective domain but this is appropriate only for the lowest levels of the taxonomy of educational objectives.

Performance-based instruction carries clear expectations for achievement and these expectations should be consistent with the learning objectives. The expectations are also the basis for the assessment or evaluation of the courses, curriculum and participants. Additionally, the expectations should be consistent with the task analysis or similar system which produced them.

Similarly, competency-based instruction has, by definition, particular accomplishments linked to the instruction. The delivery of competency-based instruction and performance-based instruction is sequential, lends itself to modularization, consistent with the "curricular spiral" and role-playing, case studies and simulations - delivery methods for higher level educational activities.

In the matrix below, we have attempted to specify the types of educational objectives in the cognitive domain which apply to different outcome-based instructional techniques.

Instructional Delivery by Outcome Basis

Objective (Bloom's Levels of Cognition)	No Outcomes	Performance-Based	Competency-Based
Knowledge	XXX	XXX	XXX
Knowledge of Specifics	XXX	XXX	XXX
Knowledge - ways to deal with Specifics	XX	XXX	XXX
Knowledge of Principles and theories	XX	XXX	XXX
Comprehension		XXX	XXX
Translation		XXX	XXX
Interpretation		XXX	XXX
Extrapolation		X	XX
Application		XX	XXX
Analysis		XX	XXX
Analysis of Elements		XX	XXX
Analysis of Relationships		XX	XXX
Analysis of Organizational principles		XX	XXX
Synthesis		XX	XXX
Evaluation		XX	XXX

X's indicate the perceived strength of the approach at the level of cognition

A key difference between foundational or generic instructional delivery and outcome-based delivery is the potential for modularized instruction. It is often not feasible for generic, basic instruction to be offered in modules since it has no precipitating objectives and no identifiable outcome objectives. It is quite consistent with the literature for either competency-based or performance-based instruction to fit into modules, and even advantageous to define the modules, based on enabling objectives, so that the instruction has a sequential logic. Finch and Crunkilton suggest that centralized or "school-site" instruction is most appropriate for core or basic knowledge skills while "work-site" instruction is most appropriate for specialized or complex instruction.[18]

Train-the-Trainer Programs

An efficient and potentially effective method of delivering instruction to the work-site, again, where the most effective training often occurs, is a train-the-trainer program. While it appears attractive conceptually, it is actually very difficult to develop a credible train-the-trainer program. Segall[19] describes the process of developing an effective trainer. She recommends that all trainers have a detailed job description which includes the roles, responsibilities and expectations. These job descriptions will vary based on the audience, the complexity of the topic, and the position of the learning objectives. The higher the level of the educational objective, the higher the level of expertise needed. She suggests that a train-the-trainer program should require the same skills of the missionary trainers as for any other trainers. Said differently, the train-the-trainer program should not "dumb-down" any of the information but should have higher expectations for the participants than other instructional programs.

She suggests five very specific elements of a train-the-trainer program:[20]

- Describe each of roles expected of those who complete a train-the-trainer program in behavioral terms, that is, what is expected of them as instructors, as evaluators, and as needs analysts (she suggests that instructors serve an important function of assessing needs based on participants' skill levels);
- Measure the trainer's current level of expertise against the desired levels to determine deficiencies;
- Outline a training program that spells out the expected level of proficiency for each developmental area, based on work experiences and educational experiences. If the participant needs adult-learning training, group-process training, active listening skills, feedback skills, negotiation skills, presentation skills, these should be evident if the first two bullets (above) have been accomplished;
- Deliver the training needed to accommodate the expectations;
- Certify training competencies by having the participant demonstrate them in a training session.

The tasks are simple, she says, if expectations are defined, measured, taught, and tested. If portions are ignored, the task is difficult, if not impossible.

Train-the-trainer programs are very attractive because they accommodate both efficiency (take the training back to the greatest number of participants) and effective (provide the instruction in the work-site environment where it will ultimately be used). It should be stressed that this method is useful only if it is conducted properly, otherwise it is potentially worse than no training.

Summary

The delivery method selected for a course, curriculum or model is heavily dependant upon the learning objective. In this section we discussed school-based versus work-based learning opportunities, with advantages and disadvantages of each. Efficiency and effectiveness are the key issues in the location of a training program or course. If it is cost-effective to bring participants to a central location and if it does not compromise the participant's ability to perform the tasks, activities, or skills when they return to the environment where the information must be applied, centralized or regionalized instruction is often appropriate. If work-site skills and activities are of highest importance, and it is efficient to transport the instructional-delivery to the participant, this is the best, most effective method. Efficiency and effectiveness are sometimes incompatible. A professional and properly conducted train-the-trainer program can accommodate both. It must, however, clearly define the expectations, measure the participants against the expectations, teach the participants, and evaluate their abilities through demonstrations.

We also addressed issues associated with individualized instruction versus grouped instruction. Sometimes these issues are similar to those surrounding centralized and decentralized instruction, but it is critical to determine the level of performance or competency desired in each of the types. We described different specific methods of delivering the instruction to the participants. These methods must fit the educational objectives. It is useful to replicate the table developed by Kern, et

al. In showing the synergism of the instructional delivery method and the educational objective:

Instructional Methods	Type of Objective				
	Cognitive: Low	Cognitive: High	Affective	Psychomotor: Competence	Psychomotor: Performance
Readings/Video	XXX	X	X	X	
Lecture	XXX	X	X	X	
Discussion	XX	XX	XXX	X	X
Problem-solving exercises	XX	XXX	X		X
Programmed learning	XXX	XX		X	
Learning projects	XXX	XXX	X	X	X
Role projects		X	XX	X	XX
Demonstration	X	X	X	XX	XX
Real-life experiences	X	XX	XX	XXX	XXX
Simulated experiences	X	XX	XX	XXX	X
Video review	X			XXX	X

Higher level objectives require particular delivery methods to be effective.

Once again, we described the essential need to define performance levels or competencies if instruction is to be meaningful. Delivery methods for competency-based instruction may include individualized instruction while delivery methods for performance-based instruction may most often be grouped methods. Ideally, the instruction for performance-based learning would be group, work-site instruction, incorporating discussion, demonstration, and real-life experiences.

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Chapter 6
Quality Control Measures

Chapter 6 Outline
Quality Control Measures
- *Program Evaluation Applied to Curricula*
- *Evaluating Training: Quality Control*
- *Program Assessment*
- *Instructional Assessment*
- *Participant Assessment*
- *Simulations or Exercises*
- *Summary*

Introduction

In this section we will address a critical element of a curriculum - the evaluation methods and approaches. Without a method of assessing the degree to which the instruction is effective in accomplishing the educational objectives, there is no opportunity for judging the effectiveness of the curriculum, instruction or the process. Interestingly, the development of the educational objectives described earlier was an effort to simplify the evaluation process. Bloom stated "curriculum builders should find the taxonomy helps them to specify objectives so that it becomes easier to plan learning experiences and prepare evaluation devices."[1] We maintain that it is vitally important to insert and maintain quality control measures in order to evaluate and assess the success of the curriculum. In the sections following, we will discuss evaluation in general, then curricular evaluation in particular. The literature is clear that curricular evaluation includes assessing the curriculum, the instruction, and the participants.

Program Evaluation Applied to Curricula

Program evaluation has long been a mainstay of social science and justice-related disciplines. When a program is implemented, it is essential to determine the degree to which it is proceeding as planned and that it has accomplished what was planned. We will address the steps in program evaluation and then the specific area of curricular evaluation.

Program evaluation, as with any type of evaluation, requires specific descriptions of the problem which is to be addressed by the program. Maxfield and Babbie[2] state "To conduct evaluation research, we must be able to operationalize, observe, and recognize the presence or absence of what is under study." The first, and often best, place to look for the thing or things under study is to examine the goals of the program or project. If a "program is intended to accomplish something, you must be able to measure that something."[3] Determining how well the program accomplished its goals is an example of impact evaluation. Impact evaluation is the true test of effectiveness and, if done correctly, can help researchers, policy-makers and planners refine the program or initiative so that it can be even more effective in the future. Impact evaluation is the highest level of assessment or evaluation. Typically, the more stringent the methodology used in impact evaluation, the stronger, more reliable and valid the results. Experimental design or quasi experimental design are viewed

as the most valuable research methods in determining the impact of a program. Often these methodologies are not available in criminal justice or the social sciences since randomization is often limited. Ex post evaluations involve the decision to evaluate something after a program has gone into effect. It is more difficult to develop a sound impact evaluation after the fact but it is still possible if the program has been carefully established. That, too, is unlikely since a carefully established program is one which should include an evaluation component.

The impact evaluation of a training initiative would judge or measure the impact the training had and has on the problems or issues which formed the rationale for the training. If the training is to allow the participant to do something or to keep something from occurring, the degree to which it accomplishes the goal is the evaluation of the training.

Process evaluation, according to Maxfield and Babbie,[4] "focuses on program outputs" or seeks to answer the question "Was the program implemented as intended?" Process evaluation, though not as rigorous or as predictive as impact evaluation, is still important. The assumption is that the program or initiative was properly established, planned well, and organized in a clear linear way. If the process is followed, the results should be good. Clearly, nobody would design a program or initiative which was not intended to be effective. Tracking the process, incrementally, can determine if the program is proceeding as planned and, if not, changes can occur so that it will be put back in the planned process.

Conducting a process evaluation of a training initiative or training program would involve tracking the steps in the development, design, implementation and feedback to see that they are conducted as planned. The plans should be precise enough to allow external evaluators to assess the process as it occurs, rather than after the fact.

"Ideally, impact assessments and process evaluations are conducted together."[5] The process evaluation may help to explain variances in the impact assessment results.

Evaluating Training: Quality Control

Maintaining quality control is a key responsibility for those who monitor and refine curricula and training programs. This quality control is typically called "assessment" and may apply to a number of activities. While there are many techniques for accomplishing the quality control, several terms must first be defined so that the usage will be clear.

Assessment	the formal or informal process of measuring an activity or initiative.
Norm-referenced	assessing an individual's achievement measured in comparison peers, a group or cohort, and/or historical data. The achievement or activity is measured relative to the person's own performance or the performance of others. It is a relative comparison.

Criterion-referenced	assessing an individual's accomplishments or achievements relative to some externally defined or explicit criteria or standards of performance.
Ipsative assessment	assessment of an individual's accomplishments or achievements through a self-referenced or personalized criterion. A relatively formal process of self-assessment where one is measured or judged based on criteria they establish for their own performance or achievement by the degree to which they have met their own target(s).
Formative assessment	a step-by-step process of assessing progress. Often based on a learning plan or action plan and the degree to which each element of the plan is accomplished. Allows clarification and explanation of processes and elements as the learner is progressing toward the ultimate objective. Designed to improve the curriculum, improve the individual's performance, or improve the process of learning.
Summative assessment	a comprehensive or formal confirmation of achievement, usually at the end of an instructional program. Often associated with tests or examinations, either practical or theoretical, which require the individual to display mastery of the skill or information. Measures the success of the training or the curriculum in achieving its objectives.
Assessment reliability	refers to the degree to which the assessment technique or instrument produces the same range of results each time it is applied. Also refers to the assessment technique's ability to differentiate between participant's performance.
Assessment validity	refers to the degree to which the assessment ensures the knowledge, skill, ability, or achievement it is designed to measure.
Performance criteria	refers to the range or list of activities which must be demonstrated or knowledge which must be shown in order to judge the individual learning exercise adequate.
Modular curriculum	a series of courses of instruction or classes, organized

	in a manner which leads to an ultimate or eventual learning experience that includes all of the necessary elements of instruction needed to perform a task, set of tasks , or activities. Presumes levels of training, from basic to advanced, and the accumulation of credits or abilities.
Accreditation of prior learning	the determination or ascertaining of knowledge, skills, and abilities the learner brings into the training initiative from prior experience or prior instruction.
Standards	the set of criteria or elements which have been determined, by whatever process, to be necessary for competency.
Competency	Knowledge, skills, and abilities which, together, account for the ability to deliver a specified professional service.[6]

Kern et al.[7] describes several methods of evaluating a professional training initiative:

Method of Evaluation	**Advantages**	**Disadvantages**
Rating forms	Convenient Inexpensive	Subjective Contains rater biases
Self-assessment forms	Economical Useful for formative evaluation	Subjective Rater biases Limited use for summative evaluation
Essays on trainee's experience	Efficient Qualitative information Formative	Subjective Varies and unreliable
Written or computer-interactive tests; Questionnaires	Standard Methodological rigor Quantitative Summative	Reliability/validity varies Not qualitative Time consuming
Oral Examinations or Individual interviews	Flexible Informal Learner centered Formative or Summative	Time consuming Subjective Does not assess performance
Group interviews or Group discussions	Efficient Flexible Respondent centered Rich qualitative information	Time consuming Subjective Requires high level of skill to facilitate Not quantitative

Direct observation	Unobtrusive Assesses performance Methodological Rigor	Requires performance standards Personnel intensive
Exercises or Performance Audits	Objective and Realistic Unobtrusive Qualitative and Quantitative Reliable and valid if performance measures exist	Requires skilled observers Time consuming Expensive

Pratt[8] described three distinct types of information which can be collected in an assessment of training:

> *presage variables* - those data which have to do with the quality of the faculty, students, historical elements, and training resources;
>
> *process variables* - the data addressing the progress and process of instruction, frequency of activities, attendance of participants, rates of use of resources; and,
>
> *product variables* - data showing the impact or results of the instruction on the accomplishment of tasks, the effectiveness of training, and the diminishing of problems for which the training is designed to ameliorate.

Pratt states succinctly, "the ultimate test of the quality of training is the impact the trained person has on some unknown future situation." This statement suggests, in no uncertain terms, that the *product* of the training must be measured, not just the process. The product or ultimate change may be measured in actual events or through change in the organization or it may be measured by proxy through exercises. This is consistent with the program evaluation methodologies described earlier.

The purpose of the other two types of information which go into an assessment is to determine, to the degree possible, if the training is progressing as intended. Again, the ultimate assessment is the product but the intermediate assessments are the quality of the instruction and the process of the instruction. If it appears, based on outcome or product variables, that the training is not meeting the goals and objectives, the presage or process variables may be altered to reformulate and renorm the training to better accommodate the objectives. Further evaluation determines whether the changes have influenced the product variables enough or in the appropriate direction.

Too often, evaluation becomes a process assessment rather than a product assessment. This is probably due to the fact that process is easier to assess than outcome. In a training program we can easily "measure" or count the number of courses offered, the number of participants, the hours of training, the frequency of repetition, and the like. These are process elements or variables which show that the program was conducted and to whom it was available. It does not help us understand the degree to which the program was effective in addressing the goals and objectives which formed

the basis for the development of the program.

Ecclestone[9] provides us with an interesting approach to assessing a training program. She identifies four distinct points in the process of training where assessment is important:

Initial Guidance	Assessment at this stage "enables the learner to make choices based on clear information about options and own abilities." Providing potential participants with information on the courses, classes, modules, objectives, competencies and performance objectives, would allow the participant or their agencies to determine the applicability and attractiveness of the course or program to their needs, skills and abilities. Without such information, the wrong people may be the training classes or those who need the training and who might benefit the most would not opt in. Assessing prior learning and individual needs or starting points is most attractive in an individualized program and may not be applicable to standardized programs. The types of assessment at this stage are typically *formative* and may be criterion-referenced or ipsative.
Admissions	makes decisions about entry to a program or the appropriate level of entry into the program. Exemptions and eligibility should be based on articulated criteria or standards. The admissions process seeks to establish homogeneity of knowledge, skills, and abilities within classes so that the instructional process can be more focused and more effective. They types of assessment at this stage are typically summative and criterion-referenced.
In-programme	records the progress of individuals or groups (if that is the focus of the training) based on the process plan, needs, and targeted intermediate instructional goals. This assessment would rely on *enabling objectives* as were described earlier. Often this assessment is formative and criterion-referenced although it can also be ipsative. If the program or course lends itself to comparisons of participants, the assessment could also include some norm-referenced comparisons.
Certification	this assessment is used to confirm achievement. The assessment is most often summative and is based on *terminal objectives*. Criterion-referenced assessments, using performance-based or competency-based instruction, are the most reliable and valid methods for this type of evaluation.

While there may be some concern with the use of the term "certification" by Ecclestone,[10] she uses it to imply some external, validated method of attesting to the inculcation of the material, knowledge, skills, and abilities intended in the instruction.

There are three critical loci of evaluation or assessment in any training or continuing education programs:

Program Assessment

Instructional Assessment

Participant Assessment

Each of these loci are important and all must be included in a creditable program. We will discuss each of these critical types of assessment and provide recommendations on the types of assessments which are appropriate for each.

Program Assessment

Program assessment may be holistic and include the entire program or initiative. It may also be more focused and address each course or category of offering. Program assessment is sometimes called "curriculum evaluation." Oliva[11] suggests that a curriculum or program define objectives which are to be "specific, measurable, programmatic statements of outcomes to be achieved by students as a group in the school or school system." These objectives are different from Bloom's Educational Objectives which address the level of cognition which should be or is targeted. Oliva defines a curriculum goal as "a purpose or end stated in general terms without criteria of achievement."[12] This goal statement may include some of the terms and phrases in Bloom's taxonomy but they would be applied in the broadest sense. For example, a program or initiative might have several goals such as:

Increase the targeted workers' awareness (knowledge) of a particular phenomenon;

Improve assessment methods of personnel reacting to a particular type of problem;

Enhance understanding of the general public for the importance of an issue.

The assessment of a program's efforts to accommodate such broadly worded statements is almost always subjective but the subjective assessment should be justified and the justification should be articulated. The assessment should have points of evidence or proof that the assessment is appropriate.

In addition to curriculum goals, curriculum objectives must be developed early in the process. These objectives should be measurable and may include some of the same terms used in goals but the objectives are stated in more specific terms which lend themselves to evaluation and assessment. Examples of curriculum objectives would be:

Ten percent of emergency department personnel will be trained in triage procedures (assessment) each year in the target cities/hospitals;

Every state will have at least five persons trained to develop state-specific reaction (application) strategies for emergency events.

The objectives should be refinements of the broader curriculum goals. Generally, the curriculum objectives should be stated in performance or behavioral terms - the knowledge, skills, and abilities which the participants are expected to demonstrate in the abstract or broadest terms. A regional or local training initiative is far easier to assess than a national initiative. Still, there are "guiding principles" which can be assessed. Oliva identifies questions which should be addressed in a curriculum assessment or evaluation:

- Is the scope of the curriculum adequate?
- Is the scope of the curriculum realistic?
- Is the curriculum relevant?
- Is there balance in the curriculum?
- Is curriculum integration desirable?
- Is the curriculum properly sequenced?
- Is there continuity of programs?
- Are curricula and courses well articulated between levels?
- Are types of learning transferable?

The answers to these questions, as well as others which can be developed for a particular type of training, can help to restructure the curriculum, the courses, and the levels of instruction. Additionally, the needs and issues will change over time and this change must be accommodated in the curricular change. Developing a curriculum is not a once-only activity but, through evaluation or assessment, the curriculum can remain appropriate and relevant.

In many ways, assessment is more important than the initial development of a curriculum. Mistakes will be made in some aspects of the development and design of a curriculum. These mistakes are assumed to be miscalculations or unanticipated consequences which can be repaired in the evaluation or assessment phase. The assessment of curriculum is important enough to merit attention to each of the questions or issues which come into play in the curriculum assessment.

Is the scope of the curriculum adequate? This issue addresses the breadth of the curriculum. It is inconceivable that all elements in the subject matter can be anticipated in the developmental phase of the curriculum. Planners should, nonetheless, attempt to select all of the knowledge, skills, and abilities to be addressed in the curriculum. The planning process should then address all of the courses, classes and instruction which accommodates the list of knowledge, skills, and abilities. For a curriculum to be a curriculum, it should link the topics based on common threads. Periodically, through the assessment process, the commonality issues must be addressed, as well as the changes which have occurred in the discipline or on the topic. With developments in knowledge and technology, it is very likely that the breadth of a curriculum will need to be expanded.

Is the scope of the curriculum realistic? Just as important as enriching the scope of a

curriculum is the examination of the curriculum to be certain that the breadth is not too ambitious. Modules of instruction and courses are linked based on a defensible logic. If that logic is stretched and a curriculum becomes unrealistic, the credibility of the program suffers. A training or educational program must be realistic in scope if it is to be taken seriously and has credibility.

Is the curriculum relevant? Just as scope is subject to change, so is the relevance of portions of the curriculum. Curriculum, when designed, is likely to be historically relevant but as it progresses, it is critical that it maintain contemporary relevance.

Is there balance in the curriculum? Halverson[13] states "curriculum balance will probably always be lacking because institutions of all kinds are slow in adapting to new needs and demands of the culture except when social change is rapid and urgent in its implications for these institutions." Often the issue of balance is seen as a series of dichotomies which must be "balanced." These include general versus specialized courses, individualization versus mass education, innovation versus tradition, and immediate versus the remote. Balance between disciplines, courses or modules, as well as within the components should also be inspected. Emphases are perceived based on imbalances in the curriculum. For example, if more courses are offered in one particular area or on a topic, it is presumed to be the emphasis of the program.

Is curriculum integration desirable? Integration addresses the blending of courses, modules or parts of the curriculum. While this may seem unnecessary since courses are, by their nature, autonomous. For courses or modules to be parts of a "curriculum" they must be related in some fashion. Some curriculum specialists refer to this integration as "correlation" or judging the relationship of courses while maintaining their separateness. Subjects, courses, and modules can be integrated horizontally or vertically. The vertical orientation or integration is similar to the "curriculum spiral" described earlier. Reassessing the interrelationship of the parts of the curriculum is important.

Is the curriculum properly sequenced? Assessing the sequencing of courses is important but it is unlikely that serious changes would occur from the design of the curriculum, if done properly, to the subsequent assessment or evaluation of the curriculum. Courses or components of a curriculum can be sequenced from the least complex to the most complex, as was described earlier. The curriculum can also be sequenced chronologically, geographically, reverse chronology, or from general to the particular.

Is there continuity of programs? Also consistent with the spiral curriculum, it is important to ascertain that concepts and skills are introduced early in the process and reintroduced in order to reinforce and enhance the exposures. It is important to make certain that the reintroduction is programed and intended, not simply repeated due to any lack of planning and oversight.

Are curricula and courses well articulated between levels? Continuity and articulation are related concepts. Curricula are articulated if the relationship between levels, courses, and

modules is according to the plans and designs of those who developed the programs. In addition to the articulation of the courses and components of the curriculum, it is important to examine and assess the articulation of the participants as to their selection, inclusion, exclusion, and progress.

Are types of learning transferable? It is very, very important that the information contained in the curriculum be the type of information which is most useful to the participants. This is the essence of the training and educational process but it must be reaffirmed through the assessment process. The information imparted must have some value outside the training process. "Transfer of cognitive learning is most often visible in student performance on assessment and standardized tests... and in the evaluations employers give of the intellectual competence of their employees."[14] We will discuss some of this in the section below on evaluation of participants. From the curricular standpoint, however, we must make certain that the information has a transferability which supports the proposition that the information is valuable.

All eight concepts or issues are interrelated. This is shown very clearly in the evaluation model proposed by Saylor, Alexander, and Lewis[15] where they divide the evaluation process into an assessment of:

- Goals, Subgoals, and Objectives
- Program of Education as a Totality
- Specific Segments of the Education Program
- Instruction
- Evaluation Program

Each of these parts of the model are divided into formative assessments and summative assessments. We will not belabor the point by describing each of these steps because there would be a fair amount of duplication with the model just described. Important here is the fact that evaluating the curriculum includes evaluating the evaluation process as well.

Instructional Assessment

Often problematic is the need to assess the level and quality of the instruction. This is different from an assessment of the program and much more specific to the process of delivering the instruction. The classic approach would define "instructional evaluation" as "evaluation of instruction through the assessment of student achievement."[16] This approach will be discussed in a later section but it clearly indicates the relationship between instruction and the results of instruction - learning.

There are actually two aspects of assessment of the instructional component. There is the assessment or evaluation of the instructors and the techniques, process, and materials used by the instructor. The other aspect of instructional assessment is the evaluation of the participants during the instruction, not simply after the instruction is over. Each of these will be addressed separately.

Assessing Instructors. Instructors may be evaluated using any of three methods:

Participant survey: This, the most traditional and widely used technique, is a cost-effective, efficient method of assessing instruction by those who have observed the greatest portion of that instruction - the participants. Participant surveys are generally applied at the end of a course or class. "Most evaluations of Continuing Education programs are administered at the end of the program offering and usually consist of a subjective rating of how the customer felt about the learning experience."[17] The questions generally cover topics such as the preparation of the instructor, the knowledge of the instructor, the enthusiasm of the instructor, the selection of instructional materials, value of instruction, and degree to which instruction was beneficial. Vernon Bryant provides twelve questions which ought to be included in such a survey:

1. To what extent did the instructor expose you to new possibilities and self-growth?
2. To what extent did the instructor help you to clarify your desire to improve your skills?
3. To what extent did the instructor aid you in the diagnosis of the gaps between your aspiration level and your present level of performance?
4. To what extent did the instructor help you respect your own feelings and ideas?
5. To what extent did you feel mutual trust and helpfulness among students?
6. To what extent did you feel a spirit of mutual inquiry between yourself and the instructor?
7. To what extent did you feel there was a mutual process of setting learning objectives?
8. To what extent were you able to share your thinking about the options in designing learning experiences, selection of materials, and the methods of instruction?
9. To what extent did the instructor help you to organize a learning-teaching environment in which the responsibility for the process of inquiry (learning-teaching teams, task groups, independent study, etc.) was shared?
10. To what extent did the instructor draw on your own experiences as resources for one another' learning?
11. To what extent did the instructor gear the presentations to your level of experience?
12. To what extent did the instructor involve you in mutually acceptable criteria for measuring your progress toward learning objectives?[18]

The scale recommended is a Likert, five-point scale ranging from "Not at all" to "Very

much." This method is useful and one very much like it is repeated in almost every course in every college and university in the United States. This method is often used in continuing education where participant approval is critical for the future of a program. Complicating the picture of effectiveness and efficiency for this approach, is the fact that multiple instructors is problematic. When a variety of instructors are used or when classes or sections are "team-taught," the survey results may be measuring what they are intended to measure or something else. The validity problems may be overpowering and negate the desire to use this simple assessment tool.

Self-evaluation. Requiring instructors to evaluate their own effectiveness is actually more useful than some would imagine. Instructors, particularly those who hold certification as instructors and/or advanced degrees, understand the expectations of the process and the degree tow which they meet those expectations. The same questions used in the end-of-course survey are appropriate for a self-evaluation assessment.

Direct observation. A time-tested method of assessing instruction is to observe random portions of the instruction. Again, the core questions used in the survey are appropriate as the basis for an observational assessment.

In addition to these methods, a passive method could be employed regardless of other methods of assessing instruction. This passive method would involve the examination and evaluation of instructional materials, including syllabi, handouts, and presentation files.

The assessment of instruction, as a component of the learning process, is appropriately termed "formative evaluation." Oliva defined formative evaluation as the "formal and informal techniques, including testing, that are used during the period of instruction."[19] This type of evaluation can be considered "progress" evaluation for the participant and "process" assessment for the instructor. The monitoring of progress and process by the persons, agency, or organization overseeing the course or curriculum can provide information on the status of the course but can be a time-consuming and intensive activity.

Participant Assessment

As described earlier, this impact assessment is best accomplished using a "summative evaluation."

> Summative evaluation is the assessment that takes place at the end of a course or unit. A final written examination (post-test) is the most frequently used means of summative evaluation of instruction. Its major purpose is to find out whether the students have mastered the preceding instruction.[20]

The two types of "measurement" of participants' performance are norm-referenced and criterion-referenced measurements. Norm-referenced assessments measure the achievement of one participant against or in relationship to all other participants in the course, class, or program.

There are specific reasons for using norm-referenced measurements and advantages to that

assessment. These are succinctly stated below:

1. The main function of norm-referenced measurement is to ascertain the student's relative position within a normative group.
2. Either general conceptual outcomes (usually done) or precise objectives may be specified when constructing norm-referenced measurement.
3. The criterion for mastery is not usually specified when using norm-referenced measurement.
4. Test items for norm-referenced measurement are constructed to discriminate among students.
5. Variability of scores is desirable as an aid to meaningful interpretation.
6. The test results from norm-referenced measurement are amenable to transportation to the traditional grading system.[21]

Norm-referenced assessments are often easier since they do not require any or much preliminary work in developing objectives or standards yet they still provided each participant with his or her standing relative to others.

Criterion-referenced assessments measure the participant's achievements against a predefined "standard" or criteria. The use of the term standard is used guardedly because it may suggest that there must be a universal or widely accepted performance level. While that may be ideal and it may occur in some disciplines, it is not necessary for criterion-referenced assessment to occur. The criteria may be the learning objectives formulated prior to the course or the behavioral objectives prepared when the course was designed.

One distinct advantage of the criterion-referenced assessment approach is its ability to influence the future development of the curriculum. As Popham stated, "norm-referenced measures permit comparisons among people" while "criterion-referenced tests make decisions both about individuals and treatments."[22]

The advantages of criterion-referenced assessment may be apparent, but it is still useful to list them specifically:

1. The main function of criterion-referenced measurement is to assess whether the student has mastered a specific criterion or performance standard.
2. Complete behavioral objectives (i.e., planning objectives) are specified when constructing criterion-referenced measurements.
3. The criterion for mastery must be stated (i.e., planning objectives) for use in criterion-referenced measurement.
4. Test items for criterion-referenced measurement are constructed to measure a predetermined level of proficiency.
5. Variability is irrelevant; it is not a necessary condition for a satisfactory criterion-

referenced measurement.

6. The results from criterion-referenced measurement suggest the use of a binary system of measurement (i.e., satisfactory-unsatisfactory; pass-fail).[23]

Competency-based Assessment

Either of these two assessment methods can and are used to assess competencies and performance. Competencies, however, suggest the presence of objective criterion so a criterion-referenced assessment is most consistent with that approach. As defined earlier, competency can be defined as the knowledge, skills, and abilities which, together, account for the ability to deliver a specified professional service. As stated by Finch and Crunkilton, a competency is a critical aspect of the work, duties, or responsibilities. It "evolves from explicit statements of worker roles" and include "specific criteria ... that clarify each competency."[24] Competency-based instruction, described earlier, involves the determination of objectives, describing the objectives in terms of criteria or competencies, and assessing the participant's progress, relative to the criterion or competencies. "Instructional staff are required to move beyond the traditional knowledge type measures such as multiple-choice and essay examinations and focus on assessment that aligns with competence in the real world."[25] A set of competencies or criterion, associated with a complex activity or set of activities, can be considered a "competency profile" and may provide, not only the criterion against which a person will be assessed but also the modules necessary to accumulate the competencies.

Performance-based Assessment

Closely related to competency-based assessment is performance-based assessment. In the brief section above, "performance" was mentioned frequently. Often in the literature, "performance-based" is used in describing an approach to designing a curriculum. It was in this way that Pucel described the process of curricular design that culminated with the evaluation or measurement of performance. Kern, et al., in describing medical curricular development, use the term "competency objectives" as a synonym for skills. They describe the training process to achieve psychomotor objectives as beginning with supervised experiences, moving to simulations and culminating with a review of the skills and experiences. In this framework, assessment and evaluation are constant processes, interwoven into the training process itself. They define "simulations" as "clinical situations" where learners can "practice skills in a 'safe' environment where risks can be taken and mistakes made without harm."[26] The three types of simulations used in medical instruction are:

Artificial models	Inanimate devices designed to simulate real clinical situations.
Role-playing	The learner has an opportunity to try, observe, and discuss alternative techniques until satisfactory performance has been achieved.
Simulated patients	This technique ensures that content area will be covered, new techniques attempted, and performance achieved with live, simulated patients who play their role as patients.

Each of these methods are efficient and allow practice as well as instruction. The last of the

methods, the simulated patients, has been found to be both efficient and effective and has less artificiality than the others.[27] This method becomes important later as we discuss "exercises" or simulations.

An approach recently described in law enforcement training involves "authentic assessment." Authentic assessment is defined as "the process of evaluating a trainee's performance on the basis of the trainee's demonstrated knowledge, skills, and abilities."[28] This assessment approach is clearly "performance-based" and the article supports the use of "portfolios" as assessment tools to measure performance of authentic or real life tasks. Offered as an alternative to traditional testing approaches, "authentic assessment" is a method for measuring performance rather than "exposure" to information. Precise descriptions of knowledge, skills, and abilities is not described as an essential element but "standards" are mentioned throughout. Of importance here is the development but instructions of "task-oriented, job-related scenarios, which reflect some of the most common (knowledge, skills, abilities, and other characteristics) necessary in the field in which recruits participate." Implicitly, there must be a set of criteria or objectives which must be met. The articles states "trainers evaluate the recruits' performance based on a specific task list developed for that particular situation." and the assessment models or "rubrics" indicate the presence of specificity in tasks and objectives:

5= The work is superior in most respects, including:
- Solicit and accept criticism in order to improve performance and act on same.
- Perform optimally under stress and non-stress conditions, acting decisively and properly.
- Exhibit mastery of officer safely tactics in all situations without becoming over-confident or paranoid.
- Demonstrate superior ability to listen, and comprehend written and verbal instructions. Respond appropriately when speaking person-to-person, on the telephone, or on the radio.
- Establish a rapport with public; remain objective and at ease with individuals, eliciting a positive public response.
- Work performance would be approved by a supervisor.

4= The work performance is very good in most areas listed above.
- Performance is competent and of high quality.
- One or more areas may be superior.
- Performance would be approved by a supervisor.

3= The performance is satisfactory in most areas listed above.
- Performance is competent.
- Skills meet at least the minimum criteria or better.
- One or more areas may be of good quality.
- Performance would be approved by a supervisor.

2= The work performance needs improvement for acceptability.
- Some skills lack the minimum criteria for acceptability.

- One or more areas may be of good quality.
- Performance would not be approved by a supervisor.

1= The work performance does not meet minimal criteria for acceptability.
- One or more areas may demonstrate the minimal criteria for acceptance.
- Some remedial work is warranted in the areas listed above.
- Performance would not be approved by a supervisor.

0= The work performance does not meet the minimal criteria for acceptability.
- Multiple skill areas listed above are inadequate.
- Performance is incomplete.
- Remedial work is warranted in the areas listed above.
- Performance would not be approved by a supervisor.[29]

Recognizing the exigencies of reducing a description of an initiative to a brief article, it is evident that many of the details and specific criteria and elements are omitted in this rating or assessment system. Also clear, however, is the prominence of "performance" as the key product in the curriculum and, therefore, in the assessment system. This is quite consistent with performance-based assessment and performance-based curricula. The result of the training is not a catalogue of unrelated tasks, each of which is evaluated, but it is set of activities which are linked and can be considered to contribute to the performance of an activity.

As said in an earlier chapter of this document, performance-based training can be very effective for group activities as well individual activity and performance. Competency-based training is most appropriate for individual assessments but not for group or team activities.

Simulations or Exercises

The use of live, realistic exercises or simulations for training is well accepted in most disciplines. Military science has used the technique to simulate battle field situations at both a training tool and an evaluation tool. The process itself has great educational value but can best be considered an adjunct to other training or educational approaches.

In 1996 the Pentagon hosted the largest parachute assault since World War II. This exercise, part of a joint U.S. and British training initiative which involved 53,000 troops, 5,000 paratroopers, 144 heavy-lift aircraft, and hundreds of pieces of heavy equipment and weaponry, was a remarkable departure from what had become "standard" training. Even though this particular exercise cost more than $17 million, it was considered necessary by the Department of Defense. It tested the combined organizations' ability to distribute information around the battle-field, the efficacy of logistical support, and the interaction of disparate units, agencies and machinery. This exercise was the ultimate test of training and was viewed as necessary by the commanders. "We've been doing all of this through simulation but we need to test the theory with practice."[30] The practice of testing capabilities in the field is a long-standing one in the military. Some might suggest that the practice is such an accepted one that its continued use is self-serving. It should be noted, however, that the exercise described above was a break from what had become the traditional method of field-testing,

computer simulation. One General noted after the exercise that some of the problems and issues observed in the live exercise, could never have been recognized in computer simulations, even though there has been a shift in that direction since 1986. An assessment by Rand of the Department of Defense computer simulation initiatives points to the need to conduct computer simulations "in the face of projected reductions in manpower and budget" and what was seen as a growing intolerance by the public of the noise of "low-flying aircraft and armored vehicles." The primacy and efficacy of field exercises was affirmed, however.[31]

Other disciplines have also recognized the value of live exercises for training and evaluation. A recent article in the Archives of Pediatrics and Adolescent Medicine describes training simulations which teach physicians to deliver near-fatal diagnoses of children to the parents:

> Using volunteers trained in role playing and communication to act as parents, seven pediatric intensive care fellows delivered a near-fatal diagnosis of a childhood illness. The mock parents then instructed the physicians on their communication skills, support, and their own perceptions. The physicians then repeated the process with the new "parents." Videotaped sessions of the interactions were graded, and physicians were significantly more effective at delivering the bad news in the second session, compared to the first.[32]

This approach is a small-scale exercise or simulation, conducted in a "least-harm" environment. Medical educators have used standardized patients for at least the last three decades.[33] They offer the same advantages of large scale exercises - realism, feedback, and controlled environment. Law, in addition to medicine, has a long history in simulations or exercises. Moot Court is a well accepted educational tool which also has an evaluative component.

Key to the effectiveness of an exercise, no matter how large or small, is the inclusion of feedback or "lessons learned." Exercises can be viewed as the last, most realistic training module and the one in which the participant or agency is expected to operationalize the information gained in other training modules. The assessment of the effectiveness of the exercise is one distinct attribute of the exercise but, at least as important, is the weaving back into the process the mistakes and successes of the training. Often termed "Lessons Learned," this information serves as the most obvious example of the feedback loop available.

Objective (Bloom's Level of Cognition)	Tests	Observation	Exercises
Knowledge	XXX	XXX	
Knowledge of Specifics	XXX	XXX	
Knowledge of ways to deal with Specifics	XX	XXX	
Knowledge of Principles and theories	XX	XXX	
Comprehension	X	XXX	
Translation	X	XXX	
Interpretation	X	XXX	
Extrapolation	X	X	
Application	XXX	XX	XXX

Analysis	XXX	XX	XXX
Analysis of Elements	XXX	XX	XXX
Analysis of Relationships	XXX	XX	XXX
Analysis of Organizational principles		XX	XXX
Synthesis	XXX	XX	XXX
Evaluation	XXX	XX	XXX

X's indicate the perceived strength of the approach at the level of cognition

While we suggest no particular method of evaluation, we do suggest that the literature demands that evaluation is essential to any instructional program. The matrix above reflects, in two dimensions, the methods viewed as most effective for certain levels of the taxonomy of educational objectives.

Summary

In this section we have provided a great deal of information on the maintenance of a training or educational program. All credible literature on the topic of curriculum development and instructional delivery stress the need to assess the curriculum, the instruction, and the participants. This quality control is a reasonable and responsible element of a curriculum.

Assessment serves many purposes. Oliva[34] describes several issues appropriate for consideration in assessment:

- Is the scope of the curriculum adequate?
- Is the scope of the curriculum realistic?
- Is the curriculum relevant?
- Is there balance in the curriculum?
- Is curriculum integration desirable?
- Is the curriculum properly sequenced?
- Is there continuity of programs?
- Are curricula and courses well articulated between levels?
- Are types of learning transferable?

Each of these question can be answered by assessing the program, the instruction, and the participants. Program assessment can be accomplished through various means, including expert panels and some of the same methods used to develop the curriculum. Instruction can be assessed through surveys, observations, and, again, expert assessment of the scope, relevance, and adequacy of the syllabi, materials, and instructional skills. Participants can be assessed using norm-referenced measures, or criterion-referenced measures. The clear preference in the literature is for criterion-referenced measures of assessment.

The assessment and quality control measures feed back in to the curricular revisions and refinement. If the curriculum and instruction is not accomplishing what is designed to do, it should be altered. The only way to determine that is to assess.

The end of this section included a discussion of the most sophisticated method of evaluating

performance - the exercise. This method is a mainstay of institutions such as the military where simulations are useful but not the penultimate tests of effectiveness. Ultimate tests are actual applications and cannot be contrived or conducted without dire consequences. The penultimate test, however, is an exercise or simulation which is a realistic as possible. While it has clear training and instructional value, it presumes a great deal of knowledge, skills, and abilities prior to the event. It is, therefore, more of an evaluation or assessment of the abilities, performance, readiness, or capacity to accomplish the goals. Like any other penultimate assessment, it is not to be employed frequently. The other methods of assessment can and should be employed as frequently as possible to refine the curriculum to meet the desired goals and objectives.

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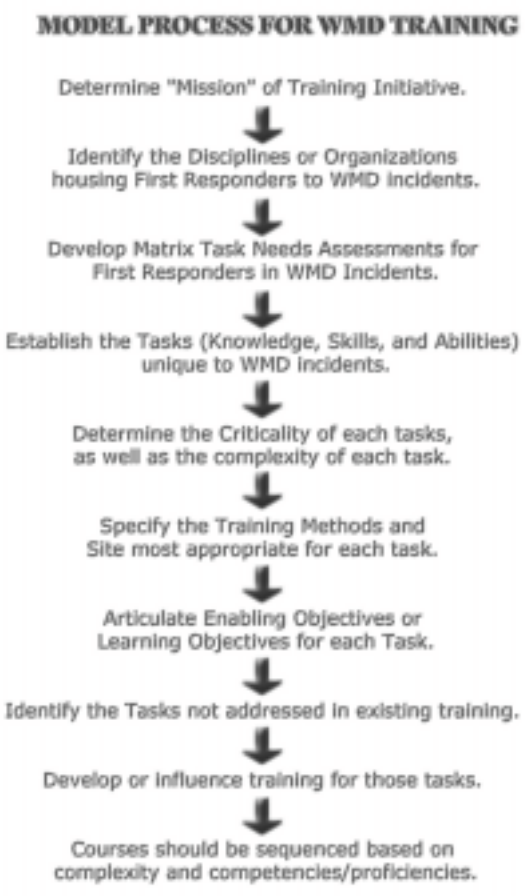
Part II. Model Process for WMD Training

The final task for The Training Strategy for ODP was to develop and apply a step-by-step strategic process for training specific to WMD incidents - a model process for WMD training. The work for this task is embodied in Part II, Model Process for WMD Training.

To develop the model process, the numerous protocols described in the literature review of Part I were synthesized, condensed, made appropriate to, and made specific for ODP-related training. This adherence to a legitimate, literature-based process provided the structure and rigor needed in developing The Training Strategy for ODP. To ensure accuracy and objectivity, it required the input of external Subject Matter Experts (SMEs) from throughout the nation's first responder community. It is this task of the strategic approach that stands in direct contrast to a non-strategic approach. The latter approach relies on the readily available opinions and wisdom of convention, whereas, the strategic approach requires research, examination, discovery, independent validation and revalidation in that it does not trust the potential bias inherent in conventional opinion and wisdom. One consistent caveat emerged from the work of this task - consistent with ODP's constant assessment and reassessment policy - neither knowledge, process or people are stagnant, hence a strategic approach should not be a one-time event, but a continuum of effort with a beginning, but no finality. The model process that was finally applied is illustrated below.



The process shown in the steps above was necessary to objectively determine and document the training mission, the training audience, work tasks performed in responding to WMD incidents and training needs. It was also critical to matching types of training with learning objectives, and delivery and evaluation methods.

To make these determinations and discoveries, and to document them, the application of the process was done in a sequential fashion. That is, after the completion of each step, there was reflection as to what that step suggested for the next. There was not a pre hoc determination of each step, each direction, and each element. The process provided a general blueprint or map, but it was constantly subjected to re-examination and revalidation. This admission points out one of the major attributes of the strategic process applied here: there was no preconceived notion as to where the process would lead, just a continued focus upon the major questions that the strategy addressed.

At the completion of each task or step in applying the process, there was discussion, reflection, and examination as to the participants' confidence in the comprehensiveness and results of that step. Further examination was appropriate in many instances, prior to moving to the next step.

Phase I
Germinal Phase: Reactive Curriculum Development

The need for training in WMD has arisen in response to terrorist threats, successful and unsuccessful, along with funding to help insulate or prepare the citizens of the nation. Rudimentary training and response preparation has existed for some time, to widely varying degrees, at the federal, state, and municipal levels. The joining of initiatives under ODP requires some immediate curricular development. This first response to the need for training is not likely to have the luxury of time needed to fully develop all of the elements of a polished curriculum. What is likely to evolve is a process similar to that described in the earliest phase of development of the criminal justice curriculum.

The first twenty years of the development of criminology and criminal justice exemplified the "rational process" using subject matter experts to construct, collate, and deliver instruction on those topics and issues "believed" to be appropriate to the discipline. Similarly, we would anticipate that the first phase of WMD training would be responsive to *perceived* needs and the curriculum development would be based on the rational process. As stated earlier, the rational process is a viable model of course and curriculum development. It is described as:

Rational Process. If there is insufficient time or insufficient information on which to proceed but it is essential to proceed quickly, a rational approach, informed by experts, often referred to as "Subject-Matter Experts," on the subject, may be the most viable method to use. If the experts on the subject are sufficiently knowledgeable, representative, unbiased, and articulate, the initial curricula should be appropriate and valid. This method is an established one in the development of curricula in training and education. It relies upon the strength of those experts who recommend and design the elements, based on their intuitive and experiential views of needs and gaps.

A somewhat more sophisticated "rational approach" but still elementary model is that of DACUM. The DACUM approach is a quasi-informal method of developing the basic elements of instruction and curriculum and is the acronym for **D**eveloping **A C**urricul**UM.** This approach was developed by the Canada Department of Manpower and Immigration along with the General Learning Corporation[1] and is a quick, straight-forward approach to developing the key elements of a curriculum. The first step in DACUM is the development of a single sheet skill profile which serves as the curricular plan. The profile is typically developed by a group of experts or persons skilled in that particular profession or activity. The DACUM group or committee develops the profile which serves as the basis for instructional content.

As with the "Rational Process," the appropriateness of the curriculum is dependant upon the expertise of the DACUM group or committee. If they are knowledgeable and comprehensive, the curriculum should be appropriate. In fact, it may be so appropriate that there are few changes once more sophisticated methods are employed. If the committee or group developing the initial or germinal curriculum are also versed in educational theory and literature, the methods used to deliver the training are also likely to be appropriate.

A reasonable process or method for (1) responding quickly to a need or demand, (2) with the most appropriate initial set of courses or curriculum, and (3) establishing the framework for a more sophisticated and defensible curriculum development, refinement, or validation approach, is described below:

- Define, as comprehensively as possible, the discipline, topics, and personnel subject to the training;
- Identify, using subject matter experts, the knowledge, skills, and abilities needed;
- Identify the existing training, resources, and courses which accommodate the needs;
- Develop new courses to accommodate the gaps;
- Deliver the training using instructors trained in the subject matter and in instruction;
- Engage in Strategic Planning to refine the parameters of the enquiry, discipline, and training;
- Engage in strategic curriculum development to revise, refine, or validate the initial or germinal approaches.

The steps in this process are consistent with those described by Tyler.[2] A revised version of what he suggested curricular developers consider is presented below:

Learner	First, though not exclusively, curricular planners should look to the learners' needs to help determine the range of topics and material to be addressed in a curriculum. In essence, the learners' needs and abilities are screened to determine the type of courses and curriculum needed.
Agencies	Agencies, organizations, communities, states, and other entities outside the learner or participant but exerting a strong influence on him or her would be the critical variable in this stage of planning.[3]
Subject Matter	The subject matter obviously exerts a strong influence on the curriculum. Tyler comments on the value of "subject matter experts" in the development of new courses and new curriculum but he infers that they are also keeping the other two elements - students and organizations - in mind as they recommend and refine new courses of study.

Tyler recommended that curriculum planners "screen" the objectives which rise from the consideration of students, society and subject. The "screen" he suggested was both a philosophical screen and a psychological screen.[4]

While we find this initial or germinal approach to curriculum and course development to be a viable one, it is not the central purpose of this document. This document, as is clear in the earlier sections, is designed to articulate the preferred or recommended *proactive* steps to be considered in the curriculum process. This is more the subject of the next section.

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Phase II
Developmental Phase: Proactive Curriculum Development

It would be inappropriate to suggest that the initial or germinal phase is simply a "placeholder" and serves no purpose other than an initial response to a problem. If done properly, the initial phase is the first step in the curriculum planning process, albeit an elementary step. Sequentially, the second phase takes advantage of the first. We return to Finch and Crunkilton for their comments on the planning process for developing a professional curriculum.

They define strategic planning as "a process or series of steps" that guide the organization through:

1. Examining the external environment and its impact on the organization now and in the future.
2. Conducting a self examination.
3. Formulating vision and mission statements to guide the organization in the future.
4. Developing specific plans that will assist the organization to fulfill its vision and mission.
5. Applying the strategies included in the plan.
6. Evaluating the organization through formative and summative assessment approaches.[1]

In effect, the initial phase performs those steps, although in a truncated fashion. We will address a more elaborate, comprehensive process of curriculum development for a specialized discipline such as WMD.

Articulating the Statement of Purpose or Mission

As we stated earlier, for a training program to be successful, it must have a philosophical basis or mission statement. This can be called any of the following:

Belief Statement:	A statement of purpose or goals of the initiative, agency, organization overseeing the training or developing the curriculum.[2]
Aims and Rationale:	"A clear set of statements which succinctly encapsulate the objectives of the course or programme."[3]
Goals and Objectives:	Helps "direct the choice of curricular content and the assignment of relative priorities to various components of the curriculum" and they "suggest what learning methods will be most effective."[4]

Or the statement can be called the "mission" of the training initiative. It should be a clear and concise statement of the "end toward which an effort is directed."[5] It is the fundamental purpose or *raison d'etre* of the program and an important element of a progressive organization. As Osborne and Gaebler said, "mission-driven organizations turn their employees free to pursue the organization's mission with the most effective methods they can find."[6] The mission statement should be clear, concise, and comprehensive in capturing the purpose of the training program. All of its elements should be understood by those who develop it. That is, it should not be ambiguous or have inherent uncertainties. Typically those people who have the responsibility for planning in the organization serve as the development group or committee for the mission statement. It must, however, be circulated for comments to others in the organization. The final, agreed-upon mission statement should be brief but meaningful. It should establish the parameters and the direction. This is especially true of governmental agencies, as reinforced by Osborne and Gaebler. Often the role of the federal government, to include a federal WMD training initiative, is to stimulate and facilitate the work of the state and local agencies and personnel so that they will be better able to enhance the quality of life in communities. As stated by McGuire et al.,[7] "the development capacity of communities becomes a prime determinant of economic, and thus governmental, performance."

Conducting the Needs Assessment

Once a program or initiative has developed its fundamental purpose of mission, the parameters of the inquiry are established and the next step is to conduct a needs assessment. Part I provided a comprehensive discussion of the various methods of conducting a needs assessment. In this section we will discuss the questions or issues addressed in a needs assessment and describe the most prominent and advantageous methods of conducting this analysis on the topic of WMD training.

Basically, the needs assessment, for a topic such as WMD where there already exists a clear and convincing need for a curriculum, takes the form of:

> Identifying the targeted learners by type of agency or "discipline;"
> Identifying the targeted learners by function;
> Describing what we expect them to be able to do (ultimate objectives);
> Assessing the tasks performed by the targeted learners (enabling objectives);
> Assessing the targeted learners' existing training levels; and
> Identify gaps, deficiencies, and needs which can be addressed in training.

While we do not propose to perform the needs assessment here, we do offer some examples of these issues which can be addressed properly through a needs assessment for an emerging discipline such as WMD:

> *Disciplines.* A basic premise in curriculum development and training is "know your audience." There are many different agencies, each with different functions and expertise, which should be considered in the development of curricula and the application of training associated with WMD. For example, some of these disciplines are:

Hazardous Materials Experts
Law Enforcement
Fire
Military
Emergency Management
Emergency Medical Personnel
Health Care or Medical Personnel (treatment and inpatient)
Public Health
Public Works
Media/ Communications
Public Representatives (Community Leaders)

Clearly the training needs and curricula vary for each of the disciplines or organizations listed above. While this list may not be comprehensive, it should be instructive in exemplifying the targeted learners by discipline.

Functions. Similarly, it is important to identify and articulate the "functions" of each targeted learner. Earlier we described five categories of the potential audience for WMD training:

Tier 1 - Awareness
Tier 2 - Operations
Tier 3 - Technician/Specialist
Tier 4 - Incident Command
Tier 5 - Integrated Systems (Multi-jurisdiction Training and Exercises)

We referred to these as competency levels. While these levels will be utilized later when we address learning objectives, they should also be considered in assessing needs. Four of the levels are described in examples in Appendix 5.

Anticipated Performance or Ultimate Objective. The essential element in any curriculum is performance. While this may appear to be a truism, it cannot be overstated. It is certainly an important, if not essential element in determining WMD training needs. For each of the disciplines and functions listed above, there is a different anticipated activity or response. The anticipated performance of medical personnel may or may not be the same as that of law enforcement personnel. The performance of the two types of personnel may be quite similar at times and quite different at other times. Curricula must be informed by the diversity of anticipated performance of the agencies and personnel. A basic dichotomy in anticipated performance is action intended to "prepare" for an event versus "respond" to an incident. Arguably, there is also the performance which would fit the category of "recognition" of an incident or the likelihood of an incident. Each agency would have different approaches to recognizing, preparing for and responding to incidents. Similarly, the phase or stage of the response to an incident involving WMD could be a discriminating factor. Certain persons and agencies react at different times and at different stages of event.

Assessing the Tasks Performed or Enabling Objectives. Identifying the ultimate objective

or performance of a targeted group may be easier than identifying the sequential or intermediate tasks they must perform in order to accomplish the ultimate objective. This assessment requires specific methods or instruments such as a "job task analysis" where targeted learners are asked to identify the things they do and the frequency with which they do them. This type of analysis is very useful in knowing the knowledge, skills, and abilities needed to perform a task. Later these enabling objectives will be useful in framing intermediate measures of proficiency or in developing modular training programs.

Assessing the Existing Training Levels. Some of the approaches used to assess existing training and existing competency are questionnaires, literature review, expert panels, competency tests, and direct observation. These methods can give a measure of the knowledge, skills, and abilities possessed by the targeted learners. It is counter-intuitive and expensive to construct duplicative training. The determination of existing competencies can also help in identifying enabling objectives. First, clearly, there must be a determination of the ultimate objectives - what we want the person to be able to do - if we are to measure their ability to do it.

Gaps, Deficiencies, and Needs. The assessment of training needs as well as the initial development of a curriculum, to be defensible, appropriate, and valid, must consider the elements listed above. This consideration is typically included in a needs assessment which identifies the gaps associated with each element. Once the anticipated performance is described, by category of targeted learner, gaps and deficiencies in existing training are assessed. Gaps are the focus of training because it is not productive to provide training on existing capabilities, unless they are to be revised and altered or applied differently.

What methods are most appropriate to accomplish these needs assessments described above? Below we have reproduced the chart showing the various methods of conducting a needs assessment, adapted from Kern et al.[8] and Finch & Crunkilton[9] which was described earlier as appropriate to professional training:

Method of Assessment	**Advantages**	**Disadvantages**
Informal Discussions	Convenient Inexpensive	Lacks rigor Contains biases
Formal Interviews	Standardized Qualitative information	Reliable Not representative Expensive Contains biases
Focus Groups	Efficient Qualitative information	Requires skill Not representative
Questionnaires and Task Analyses	Standard Methodological rigor Quantitative	Skill Not qualitative Time consuming
Direct Observation	Assesses existing skills Informal	Time consuming Contains biases

	Assesses existing ability	Does not assess performance
Proficiency Tests	Efficient Effective Assesses existing Ability Assesses knowledge	Time consuming Does not necessarily assess real-life performance Requires high level of skill to develop
Audits or Organizational Outcome Measures	Unobtrusive Assesses performance Methodological Rigor	Requires performance standards Requires resources Produces incomplete data
Strategic Planning Process	Produces Prioritization Involvement by key persons Qualitative Involves key people Establishes goal/objective	Requires skilled facilitators Time consuming Not quantitative

Clearly, each of these approaches has advantages and disadvantages. It should be mentioned that qualitative and quantitative attributes are not ordinal but nominal categories. Neither has dominant advantages over the other. They are simply two different categories of "information" on topics related to needs assessment. It may appear that quantitative data are more defensible and, to some degree, they imply reliability and validity, but qualitative information can be of immense value. Cost, time, and complexity are variables which must be considered in determining the "best" way to measure training needs.

Non-specific Outcomes, Competency-based, and Performance-based Training

This category is not always listed as a step in the developmental process. The category of training is, however, always a consideration in determining the type and complexity of the curriculum and the methods of evaluating the participant.

Generic training, as described earlier, is that training which has no particular or specific expectations of abilities resulting from the training. It may enhance knowledge but typically is not related to skills or abilities.

Performance-based instruction or training is that which is intended to produce measurable and valid changes or improvements in performance. Performance-based assessment was described by Thermer as a more reliable method of assessing police training.[10] Performance-based instruction is especially useful for activities (knowledge, skills, and abilities) which are predominantly group endeavors. A group or team can perform tasks and accommodate needs which can be assessed objectively based on the accomplishments and performance. The next type of approach described, competency-based instruction, is applicable to individual efforts but more difficult to apply to groups or teams.

McGaghie, et al.[11] describe medical education as traditionally and primarily "subject-centered." This type of instruction is consistent with competency-based instruction. Competencies "are those tasks, skills, attitudes, values, and appreciations that are critical to success" in a field of study or an activity."[12] Competency-based instruction is different from other types of instruction in several ways:

> First, such a curriculum is organized around functions required in the practice of the discipline or topic being taught;
>
> Second, it is grounded in the supposition that the students invited and allowed to attend the instruction are of such quality that they are capable of mastering the performance objectives; and,
>
> Third, the processes of learning and displaying mastery, as well as the process of teaching, are both able to be assessed and evaluated.

If an educational or instructional focus meets these three criteria, it may be taught in a competency-based format. "Mastery learning," of which competency-based instruction is synonymous, "means that, given adequate preparation, unambiguous learning goals, sufficient learning resources, and a flexible time schedule, students can with rare exceptions achieve the defined competencies at high levels of proficiency."[13]

The process of defining the ultimate objectives in the needs assessment is a step toward performance-based and competency-based curricula. Clearly, these types of instruction have standards of accomplishment which facilitate course development and assessment.

Establishing Educational Objectives

As has been said frequently enough to become a theme, it is critical that specific objectives or desired knowledge, skills and abilities be articulated for each category of targeted learners. Once the knowledge, skills, and abilities have been identified, they can be mated with educational objectives. The level of educational objectives, as well as the domain in which they reside, determines, in large measure, the complexity of the courses, the methods of delivery, and the methods of evaluating the instruction. The cognitive, affective, and psychomotor domains were discussed in some detail in Part I, as were the levels within each domain. For each set or category of targeted learners, determining the domain and the level will assist with:

- Ordering Goals and Objectives
- Progression of Courses
- Determination of Competencies
    - Starting Points and Entry Points
    - Courses Skipped
- Evaluating Participants and Courses
- Revising Curriculum
- Training Delivery Techniques and Locations

Briefly, the three domains are described as:

Description of Cognitive Taxonomy[14]

Knowledge (recognizing or recalling ideas, material, or phenomena)

Knowledge of terminology: define terms, distinguish words, understand terms and concepts.

Knowledge of Specific Facts: recall facts, dates, recognize events.

Knowledge of ways and means of dealing with specifics: Familiarity with, conscious of, knowledge of rules, understanding continuity, know developmental categories, recognize range of features, know types, familiar with criteria, know basic elements, know how to attack or address problems, know various techniques.

Knowledge of universals and abstractions in a field: Know key principles, know major generalizations, be familiar with key laws, recall major theories, understand interrelationships, understand structural organization.

Comprehension (when confronted with a communication, knowing what is being communicated and how to use it)

Translation: translate from symbolic form, read illustrations, read maps, tables, diagrams, graphs to or from verbal forms.

Interpretation: grasp a complete thought or situation, distinguish between appropriate and inappropriate conclusions drawn from a body of data or information, interpret social data, draw conclusions and state them effectively, predict trends.

Application (given a new problem, ability to apply correct abstractions without prompting) Ability to apply generalizations to problems, ability to apply procedures to problems, skill in applying laws to situations.

Analysis (ability to break down material into constituent parts and detect relationships of the parts)

Analysis of elements — ability to recognize unstated assumptions, ability to distinguish facts from hypotheses, skill in identifying motives, distinguish conclusions from the facts supporting conclusions.

Analysis of relationships — comprehending interrelationships and order of relationships, recognizing relevant elements for validation, recognize essential facts, distinguish cause-and-effect, detect logical fallacies in arguments.

Analysis of organizational principles:
Recognize form and pattern in actions and behavior, ability to infer purpose or point of view, ability to infer philosophy, ability to recognize bias.

Synthesis (putting together elements and parts to form a whole)

Production of a unique communication
Ability to write creatively, make extemporaneous speeches.

Production of a plan — Ability to propose ways to test a concept, integrate diverse concepts into a solution, plan a unit of instruction, design tools or machines.

Derive a set of abstract relations:
Ability to formulate a theory of action, perceive various was to organize actions or elements to address an issue or problem.

Evaluation (making judgements about the value of ideas, works, methods, or solutions)
Assessing work, accuracy, or arguments, using certain criteria, comparing facts, theories or generalizations to determine validity; appraise judgements or values.

Description of the Affective Domain:

Receiving (attending)
Awareness
Willingness to receive
Controlled or selected attention

Responding

Acquiescence in responding
Willingness to respond
Satisfaction in response

Valuing

Acceptance of a value
Preference for a value
Commitment (conviction)

Organization

Conceptualization of a value
Organization of a value system

Characterization of a value or value complex

Generalized set
Characterization[15]

Description of Psychomotor Domain [16]

Perception	ability to identify based on feel or touch.
Set	able to demonstrate use of simple tool, instrument, or mechanism.
Guided response	able to imitate an observed movement or procedure.
Mechanism	demonstrate mixing or combining of chemicals.
Complex overt response	operate complex or intricate equipment.
Origination	create original exercise, movement, game, or technique.

The categorization of the educational objective is made simpler through the informed use of verbs in describing the outcome:

Cognitive Domain Taxonomy and Verbs

Level	Verbs
Knowledge	identify, specify, state
Comprehension	explain, restate, translate
Application	apply, solve, use
Analysis	analyze, compare, contrast
Synthesis	design, develop, plan
Evaluation	assess, evaluate, judge

Affective Domain Taxonomy and Verbs

Level	Verbs
Receiving	accept, demonstrate awareness, listen
Responding	comply with, engage in, volunteer
Valuing	express a preference for, show concern
Organization	adhere to, defend, synthesize
Characterization by value	show empathy, show ethical consideration

Psychomotor Domain Taxonomy and Verbs

Level	Verbs
Perception	distinguish, identify, select
Set	assume a position, demonstrate, show
Guided Response	attempt, imitate, try
Mechanism	make habitual, practice, repeat
Complex overt response	carry out, operate, perform
Adaptation	adapt, change, revise
Origination	create, design, originate

Cognitive: Recall or recognition of knowledge and the development of intellectual abilities and skills.

Affective: Changes in interest, attitudes, and values, and the development of appreciations and adequate adjustments.

Psychomotor: Develop manipulative or motor-skills which are neuromuscular or physical and involve different degrees of physical dexterity.

If, for example, the training objective were to enhance the understanding of large numbers of persons on the basic awareness and concepts of an issue such as WMD, the instruction would probably be aimed at the "Knowledge" level of instruction and could be accomplished in large groups, use distance learning approaches, and involve multiple choice tests or evaluation instruments. If the objective were to instruct program managers or administrators on the process of developing a plan of action following an incident involving WMD, the instruction would need to be intensive, small-group exercises, aimed at "Synthesis," would require that the previous levels of learning had been mastered, and the mastery of the information would be judged by a model "plan of action" prepared by the participant.

One issue which has been left unstated is the precise definition of each of the categories or tiers. We have developed, as an example, a statement defining these categories. See Appendix 5, Defining WMD Responders by Performance Tasks, for a suggested Standard Operating Procedure to describe the levels or tiers. Once the learning objectives have been defined and the tiers defined, it is possible to cross-reference the objectives to determine the degree to which they conform to the basic assumptions of the curriculum.

The following matrix shows, as an example, the learning objectives which are generally consistent with four of the levels or tiers of personnel responding to an incident of WMD. These four levels - awareness, operations, technician, and incident command - require very different knowledge bases. The curricular objectives should be consistent with the expectations of the learners.

Levels of Training in the WMD Field

Objective (Bloom's Level of Cognition)	Awareness	Operations	Technician	Command
Knowledge	X	X	X	X
Knowledge of Specifics	X	X	X	X
Knowledge - ways to deal with Specifics	X	X	X	X
Knowledge of Principles and theories	X	X	X	X
Comprehension		X	X	X
Translation		X	X	X
Interpretation		X	X	X
Extrapolation		X	X	X
Application		X	X	X
Analysis			X	X
Analysis of Elements			X	X
Analysis of Relationships			X	X
Analysis of Organizational principles			X	X
Synthesis				X
Evaluation				X

There will be variances from this matrix due to different disciplines and the complexity of skills needed. It is presented here to serve as an example of the merging of objectives and tiers. Not included here is the highest level or tier, the multi-jurisdictional level. This level would, for most activities, be at the highest level of the taxonomy. Some of the skills and abilities would best fit the psychomotor domain and that also suggests particular delivery methods (described below) and course objectives.

Developing Training Courses

The actual development of the course or courses in a curriculum should be accomplished by those with expertise in the subject matter. The courses should include learning objectives and, if appropriate, behavioral objectives as well. The objectives should be subdivided into enabling objectives or categories so that incremental assessments can be made by the participants or by the instructors.

The development of a syllabus for each course is indicative of the degree to which the instructor has planned the activities around the information available. One text which is popular as a guide for trainers is The Trainer's Handbook. It specifies six steps in writing an agenda (outline for a course):

1. Divide your training time into smaller blocks of time.

2. Using needs analysis, task analysis, and training objectives, select the learning pattern.
3. Match each unit of time with one or more objectives, then select appropriate substructures for each unit or module.
4. Select the best methods for each module.
5. Fine-tune the program by checking for variety and proper timing.
6. Write a lesson plan for each module.[17]

Again, the elements of this process point to the centrality and criticality of establishing course objectives. Since it is anticipated that much of the individual course development will be conducted by agencies other than ODP, we have included in Appendix 6 an example of a Standard Operating Procedure for the development of courses. Such a procedure could be disseminated to all organizations or agencies developing or proposing courses to insure that standard practices are followed.

While much of the course preparation and delivery is left to the experts who are the instructors, some activities at this stage are still important for the agency monitoring the training. If courses, instructors and participants are not assessed, it is very difficult, if not impossible, to determine if the course or courses have been developed properly.

Merging Courses Into Curricula

In Part I we described the "Curriculum Spiral" which establishes the order in which in is appropriate to instruct. Generally, this spiral suggests that it is most appropriate to cover material from simplest to most complex but it also suggests that it is necessary to give learners a holistic view of the information so that they can see how it fits together. Another way to organize information and courses is three basic categories:

Core of basic Knowledge, skills, and abilities;

Broad technical knowledge, skills, and abilities; and

Specialized technical knowledge, skills, and abilities.

Dowling applied the "spiral curriculum" approach to technical training curricula in order to show the logical, organized progression of courses in a curriculum:

- courses should be organized in a simple-to-complex, general-to-detailed, abstract-to-concrete manner; and,
- in order for a student to progress from one level to another more complex level, certain requisite skills must first be mastered.[18]

This "spiral" organization becomes even more critical if modules are included in a curriculum. These modules may actually be courses addressing one or more of the enabling objectives, organized to

form a logical path to the ultimate objective.

Delivery of Courses

Once again, we note that the delivery method selected for a course, curriculum or model is heavily dependant upon the learning objective. Efficiency, convenience, and effectiveness are key issues in determining method of delivery and the location of a training program or course. If it is cost-effective to bring participants to a central location or school-site and if it does not compromise the participant's ability to perform the tasks, activities, or skills when they return to the environment where the information must be applied, centralized or regionalized instruction is often appropriate. If work-site skills and activities are of highest importance, and it is efficient to transport the instructional-delivery to the participant, this is the best, most effective method. Efficiency and effectiveness are sometimes incompatible. A professional and properly conducted train-the-trainer program can accommodate both. It must, however, clearly define the expectations, measure the participants against the expectations, teach the participants, and evaluate their abilities through demonstrations.

WMD training is particularly sensitive to issues associated with individualized instruction versus grouped instruction. Direct instruction, or the face-to-face interaction between the instructor and the learner is another category of delivery to be considered. It is the most frequently used method and can include lecture, discussion, problem-solving, role-playing, and other exercises. Higher level objectives require particular delivery methods to be effective.

Once again, we described the essential need to define performance levels or competencies if instruction is to be meaningful. Delivery methods for competency-based instruction may include individualized instruction while delivery methods for performance-based instruction may most often be grouped methods. Ideally, the instruction for performance-based learning would be group, work-site instruction, incorporating discussion, demonstration, and real-life experiences. Appendix 7 includes a Standard Operating Procedure which could be disseminated to organizations and agencies to guide them in framing the proper delivery method for a course or courses being developed.

Evaluating the Training

Throughout Part I we stressed the need to develop learning objectives in order to design, develop, and deliver the appropriate courses and information. We also discussed competency-based instruction and performance-based instruction as the preferred approaches in developing a curriculum. We have reaffirmed those principles in Part II of the strategy. If they have been accommodated, and objectives specified, the evaluation component of a curriculum or course in WMD is simple and straightforward. The only task remaining is to test the effectiveness of the method, the instruction, and the participants.

Assessing or evaluating the training program is one aspect of quality control. The assessment may address "process" issues, such as the efficiency of the program, the enrollment, the costs, the attendance, etc. Or the assessment of the program may address the impact of the program or course. Impact, or "product" is more difficult to judge but far more important. In WMD training, the impact

of a program can best be assessed through live exercises. This is often considered the penultimate test of a training initiative. Since its costs are typically high, other methods must be considered.

At the most elementary levels, a program can be assessed through questionnaires or surveys of participants to determine the degree to which they feel their knowledge, skills or abilities were enhanced by the training. If the curriculum and course has been established, designed, and developed properly, this would be a viable method. If the design or predicate of a course or program is in question, it may not be providing the appropriate instruction so the degree to which it is doing a bad thing well is not important.

Often the assessment of a program concerns the balance, scope, relevancy, sequencing, continuity, articulation, and transferability. Rather than construct a convoluted and complex method of assessing each of those variables, a training program or training component in WMD should be assessed periodically by a panel of independent experts to address each of those issues. Additionally, the ODP training initiative could empanel a "curriculum review board" or committee to assess programmatic issues, to include curriculum, periodically (quarterly, for example).

Assessing instructors should be a component of the course proposals. The qualifications of the instructors should serve as prima facie evidence of their ability. Other methods to assess instruction would include self-evaluation and end-of-course assessments by participants, reviewed by ODP and the "curriculum review board."

Assessing participants is sometimes ignored in professional training. The assumption is that professionals will know when they are receiving quality information and when they are not so it is sufficient to use end-of-course assessments that are ipsative. Another assumption sometimes associated with professional training is that the enrollment is a proxy for quality. If quality deteriorates, enrollment will suffer. Neither of these assumptions are necessarily true. Reluctance to assess participants should be interpreted as fear that "value-added" is insufficient. If courses are designed with objectives, and the objectives can be articulated, they can also be measured. If they can be measured, they should be done in a summative fashion. The two approaches in evaluating performance of participants are normative and criterion-referenced. Either will allow an assessment, not just of the participant, but of the course, the instruction, and the content. It may be that a course is too complex to accommodate the objectives and should be divided into modules with enabling objectives measured in each. Additionally, formative evaluation can be useful in assessing the course, curriculum and sequencing of objectives.

Revising the curriculum

The information gleaned in the assessment of program(s), instruction, and participants should feed back into the planning and design of the program and future courses. The "systems" approach to curriculum as well as strategic planning, both described in Part I, demand a feedback component. As suggested in the previous section, a "curriculum review board" or panel can consider the information from assessments, review the educational objectives, and make recommendations for program or course revisions. Additionally, the needs assessment process is an on-going one and may contribute new audiences and new needs to the process. The curriculum is likely to swell and

contract as the new needs are identified and others are determined to be satisfied or no longer appropriate.

As new needs are suggested within the area of WMD, they should be subjected to a review process which would include the following issues:

Does the need/audience fit within the mission statement?
How critical is the need/audience?
Can other existing courses accommodate the need/audience?
    If so, will its inclusion compromise existing offerings?
    If not, will it require inordinate resources to develop, balanced against the benefits?
What are the articulable reasons for inclusion?
What are the reasons for declining?
    (A process for submitting recommendations or requests to the Curriculum Review Board or panel would allow an external, objective assessment of these questions, along with a proposal including anticipated costs.)
What are the educational objectives of a new course?
What is the sequencing within the curriculum of such a course or audience?
What are the implications to the balance of the curriculum?

These questions and issues are used to exemplify the process which can be used to address and assess recommendations for additions but also could address recommendations for revisions.

We include in Appendix 9 a screening form which exemplifies the kinds of issues or questions which apply to existing courses as well as new courses and audiences.

There is, of course, other phases following the Germinal Phase. These will be transitional for the entire existence of the training and educational initiative. We do not suggest the direction these phases will go, only that they will exist and the curriculum will always be in a transitional or developmental period. If the theories, recommendations, and guidance provided by volumes of educational texts and articles are followed in the curricular process, the development will always be "appropriate."

Finally, we provide a set of questions, consistent with Part II which can be used in directing the development of the WMD curriculum. The questions represent a process, based on sound methodology, and we believe the questions will assist in the progression of the curriculum through the germinal or developmental phase. Process cannot nor should it attempt to take the place of experts on topics related to WMD, but a defensible curriculum development process can be a critical and valuable adjunct to that expertise.

Critical Questions in Developing the WMD Curriculum Process

There are five overarching questions to be addressed in the development of WMD courses and curricula. They are:

- Who should be trained?

- What tasks should they be able to perform?
- Which training delivery/instruction methods and training sites need to be paired with which tasks to maximize success in training?
- What methods are the most capable of evaluating competency and performance upon completion of training?
- What gaps need to be remedied in existing training to assure consistency with the findings of *The Training Strategy*?

In answering those questions, the strategic planning process compels us to answer other relevant questions:

What is the "Mission" or Statement of Purpose of the training initiative?
(Methods-Committee, panel, experts, nominal group, strategic planning workshops. Purpose: To give direction, focus, and parameters to the training initiative.)

How can we reliably and validly assess the answers to each of the following?

What "disciplines" or agencies represent the targeted learners?

What are the knowledge, skills, and abilities desired of the targeted learners?

What do we expect each discipline, by function, to be able to do (ultimate objectives)?

What intermediate tasks are performed by each category of targeted learners (enabling objectives)?

What are the existing training levels of each category of the targeted learners?

What are the gaps, deficiencies, and needs which can be addressed in training?

(Methods-Discussions, interviews, Delphi panels, questionnaires, task analysis, direct observation, proficiency tests, audits, strategic planning. Purpose: To determine the type and amount of training needed for each group and category of targeted learners.)

Is the training performance-based, competency-based, or non-specific in its outcome?
(Method-Excerpted from ultimate objectives. Purpose: To orient the objective to the proper domain - cognitive, affective, psychomotor)

Within the three domains, what are the "learning objectives" for each group and category of targeted learners?
(Method-Excerpted from ultimate objectives. Purposes: Assists in Ordering Goals and Objectives, Progression of Courses, Determination of Competencies, Starting Points and Entry Points for Learners, Courses Skipped or Tested-out, Evaluating Participants and Courses, Revising Curriculum, Determining Training Delivery Techniques and Locations)

What courses can be offered to address the needs of each group and category of targeted learners (approved for offering based on consistency with learning objectives)?
(Method-Scanning existing courses in companion disciplines, developing new courses, requests for proposals for courses. Purpose: Meets a proven need with appropriate course work)

What is the appropriate sequencing of courses, by category and group of targeted learners, so that the objectives "spiral" from the simplest to the most complex?
(Method- Utilizing enabling objectives and ultimate objectives, sequence activities within categories, based on complexity - simple to complex. Purpose: Assists in organizing the curriculum, modules, and assessments.)

How is each course to be delivered so that it accomplishes the learning objectives in the most convenient, cost-effective method? (Method-Plot the learning objective in the matrix of delivery methods, considering direct instruction and distance instruction, work-site and school-site. Purpose: Provide the most effective and efficient instructional method)

What are the evaluation components of each course? (Method-Insure that courses/programs, instruction/instructors, and participants are evaluated, using learning objectives as the product measures; for entire initiative, exercises or live simulations should be used to test impact of training holistically. Purpose: Unless courses, instruction, and participants are assessed, there is no evidence that the courses, instruction, and programs are accomplishing their purposes or objectives)

What strategies insure that evaluation will feed back into revision of courses and curricular planning? (Method-Empanel a Curriculum Review Board to convene periodically as well as an objective panel of experts to assess courses and curricula. Curriculum Review Board should be the key element in revision and addition. Purpose: Complete the defensible process for curriculum design, development, delivery, evaluation, and revision)

Notes to Phase II

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Appendix 1

SME Survey and Results

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SME Survey and Results

A total of 50 questionnaires from SMEs were received and 235 tasks assessed across ten disciplines and the global category. Each task was assessed multiple times, from two to 18, depending upon the number of SMEs for each discipline. All totaled, 1,019 duplicated tasks were assessed, using twelve variables per task. What follows is a discipline-by-discipline review of the preliminary results. Key criteria are reflected below, particularly those which address the issues of criticality of the tasks (the exact question was "Indicate, on the scale below, the level of 'criticality' you associate with someone in your discipline being able to perform this task - How important is the task?" with a scale from Not Important (1.0) to Essential (5.0)) and the degree to which the tasks are accommodated through existing training (the exact question was "Select the likelihood that the knowledge, skill, or ability associated with the task is already a part of the training received by most professionals in this discipline." with the range from Not Part of Any Existing Training (0%) to Already Part of All Training (100%)). Additional items from the questionnaire were selected and assessed for this summary.

Discipline-specific Assessments

For purposes of the survey, there were ten disciplines assessed and one category labeled "Global" which represented tasks SMEs believed applied to all disciplines. The disciplines are:

1. Emergency Medical Services (EMS)
2. Emergency Management Agency (EMA)
3. Fire
4. Governmental Administration
5. Health Care
6. Hazardous Materials (HazMat)
7. Law Enforcement
8. Public Health
9. Public Safety Communications
10. Public Works
11. Global

EMA

There were 27 tasks included in the EMA questionnaire and two SMEs completed the questionnaires. The SMEs showed a high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .821. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 27 tasks showed that they felt the tasks reflected a criticality rating of 4.58 which, if converted to a percentage rating would equal 91.6%. They

believed that the tasks, on average, were accommodated by 38.49% of existing agency training in their discipline. About one third (36%) of the tasks were shown to be accommodated by less than 50% of existing training.

The preferred method of training was "Projects and Exercises" (recommended in 90% of the tasks) with on-site training in the agency the most appropriate location for 87% of the tasks. Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. About one third (30%) of the tasks were in the lower levels of the cognitive domain but 46% were placed in the "synthesis" category at the higher range of the domain.

This discipline provides a good example of the need for courses and curricula to address critical issues, since little training on those issues and tasks exists.

EMS

There were 14 tasks included in the EMS questionnaire and four SMEs completed the questionnaires. The SMEs showed a high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .904. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 14 tasks showed that they felt the tasks reflected a criticality rating of 4.15 which, if converted to a percentage rating would equal 83%. They believed that the tasks, on average, were accommodated by 31.2% of existing agency training in their discipline. About one third (36%) of the tasks were shown to be accommodated by more than 50% of existing training.

The preferred method of training was "Projects and Exercises" (recommended in 62.5% of the tasks) with on-site training in the agency the most appropriate location for 89% of the tasks. Additionally, Computer Based Instruction was shown to be preferred in 11% of the responses. Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. For example, administering treatment in a WMD incident was given an average criticality level of 5.0, the highest possible, and the rate to which it is accommodated by existing training averaged 30%. A high percentage (86%) of the tasks were in the lower levels of the cognitive domain.

This discipline provides a good example of the need for focused modules to address critical issues, integrated into existing training on those issues.

Fire

There were 21 tasks included in the Fire questionnaire and three SMEs completed the questionnaires. The SMEs showed a high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .903. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 21 tasks showed that they felt the tasks reflected a criticality rating of 4.19 which, if converted to a percentage rating would equal 83.8%. They believed that the tasks, on average, were accommodated by 59.8% of existing agency training in their discipline. About 77% of the tasks were shown to be accommodated by more than 50% of existing training.

The preferred method of training was "Projects and Exercises" (recommended in 56% of the tasks) and self-paced training was the preferred method in 15% of the responses. Few gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. A very high percentage (92%) of the tasks were in the lower levels of the cognitive domain.

This discipline provides a good example of one in which there are few gaps and the need for new, additional training is limited. Influencing the addition or inclusion of tasks into existing training would appear to be the most effective approach.

Governmental Administration

There were 11 tasks included in the Governmental Administration questionnaire and three SMEs completed the questionnaires. The SMEs showed a reasonably high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .754. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 11 tasks showed that they felt the tasks reflected a criticality rating of 4.15 which, if converted to a percentage rating would equal 83%. They believed that the tasks, on average, were accommodated by only 22.4% of existing agency training in their discipline. On-site training at the agency's location the most appropriate location for 85% of the tasks. Projects and exercises were preferred by 63% of the respondents and discussion was the appropriate training method selected for some tasks by 21%.

Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. About one third (36%) of the tasks were in the lower levels of the cognitive domain but 36% were also placed in the "synthesis" category at the higher range of the domain.

This discipline provides a good example of the need for courses and curricula to address critical issues, since either there is little existing training or the training that exists is deficient.

HazMat

There were 30 tasks included in the HazMat questionnaire and four SMEs completed the questionnaires. The SMEs showed a high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .903. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 30 tasks showed that they felt the tasks reflected a criticality rating of 4.44 which, if converted to a percentage rating would equal 88.8%. They believed that the tasks, on average, were accommodated by a very high 68.7% of existing agency training in their discipline. About 75% of the tasks were shown to be accommodated by more than 65% of existing training, according to the aggregate responses of the SMEs. So, even though the criticality levels were high, with 92% of the task questionnaires rating a criticality level of 4 or 5, most of the tasks are already accommodated by training in the discipline.

The preferred method of training was "Projects and Exercises" (recommended in 68% of the task questionnaires). Few gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. A high percentage (85%) of the tasks were in the lower levels of the cognitive domain.

This discipline provides few gaps and the need for new, additional training is limited. Influencing the addition or inclusion of tasks into existing training would appear to be the most effective approach.

Health Care

There were 27 tasks included in the Health Care questionnaire and two SMEs completed the questionnaires. The SMEs showed a very high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .946. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 27 tasks showed that they felt the tasks reflected a criticality rating of 4.28 which, if converted to a percentage rating would equal 85.6%. They believed that the tasks, on average, were accommodated by only 30.57% of existing agency training in their discipline. Problem-solving exercises (26%) and projects and exercises (35%) were viewed as the most preferred training methods.

Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. More than half (56%) of the tasks were in the lower levels of the cognitive domain.

It appears that there is either little existing training or the training that exists is deficient. This discipline provides a good example of the need for courses and curricula to address critical issues.

Law Enforcement

There were 25 tasks included in the Law Enforcement questionnaire and four SMEs completed the questionnaires. The SMEs showed a high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .852. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 25 tasks showed that they felt the tasks reflected a

criticality rating of 4.21 which, if converted to a percentage rating would equal 84.2%. They believed that the tasks, on average, were accommodated by only 26.7% of existing agency training in their discipline. Projects and exercises (34%) and programmed learning (23%) were viewed as the most preferred training methods. On-site training in the agency was strongly preferred (84%) with central facility training appropriate in 16% of the questionnaires.

Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. Two-thirds (66%) of the tasks were in the lower levels of the cognitive domain, making them very appropriate for programmed learning approaches.

It appears that there is either little existing training on WMD incidents for law enforcement or the training that exists does not reach most people in the discipline. This discipline provides a good example of the need for courses and curricula to address critical issues but, since there is a defined structure for existing training, adding to the capacity of that training would be most appropriate.

Public Health

There were 36 tasks included in the Public Health questionnaire and two SMEs completed portions of the questionnaires. The SMEs showed a high level of concordance in their answers to the questions that were completed, with a Kendall's W (Coefficient of Concordance) of .852. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 36 tasks showed that they felt the tasks reflected a criticality rating of 4.11 which, if converted to a percentage rating would equal 84.2%. They believed that the tasks, on average, were accommodated by only 17.07% of existing agency training in their discipline. This extremely low percentage suggests the need for validation of the information before progressing. Problem-solving exercises (28%) and projects and exercises (43%) were viewed as the most preferred training methods.

Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low.

It appears that there is either little existing training or the training that exists is deficient. This discipline provides a good example of the need for courses and curricula organized around planning activities and tactical response activities.

Public Safety Communications

There were 5 tasks included in the Public Safety Communications questionnaire and four SMEs completed the questionnaires. The SMEs showed a reasonably high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .788. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 5 tasks showed that they felt the tasks reflected a criticality

rating of 3.9 which, if converted to a percentage rating would equal 78%, a relatively low level of criticality. They believed that the tasks, on average, were accommodated by only 22.5% of existing agency training in their discipline. On-site training at the agency's location the most appropriate location for 75% of the tasks and distance learning methods appropriate for 20%. Projects and exercises were preferred by 20% of the respondents and discussion was the appropriate training method selected for some tasks by 30%.

Few gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low.

This discipline provides a good example of the need to develop courses and curricula which can be delivered in a distance format or added to existing training for those topics where gaps exist.

Public Works

There were 17 tasks included in the Public Works questionnaire and three SMEs completed the questionnaires. The SMEs showed a very high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .941. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0.

The average response of the SMEs to the 17 tasks showed that they felt the tasks reflected a criticality rating of 4.18 which, if converted to a percentage rating would equal 83.6%. They believed that the tasks, on average, were accommodated by only 32.3% of existing agency training in their discipline. Projects and exercises were preferred by 51% of the respondents and programmed learning was the appropriate training method selected for some tasks by 31%.

Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. About two-thirds (64%) of the tasks were in the lower levels of the cognitive domain.

This discipline provides a good example of the need for modular training to supplement existing training for the discipline, augmented and tested through exercises.

Global

The Global area, though not a "discipline," represents those tasks thought to be important to, or appropriate for, all disciplines associated with WMD.

There were 22 tasks included in the Global questionnaire and 18 SMEs completed the questionnaires. The SMEs showed a high level of concordance in their answers, with a Kendall's W (Coefficient of Concordance) of .892. Perfect concordance would be associated with a score of 1.0 and perfect disagreement world be reflected by a Kendall's W of 0.0. This concordance is especially impressive considering the number of SMEs associated with responding to the questionnaires.

The average response of the SMES to the 22 tasks showed that they felt the tasks reflected a criticality rating of 4.17 which, if converted to a percentage rating would equal 83.4%. They believed that the tasks, on average, were accommodated by 40.5% of existing agency training in their discipline. Projects and exercises (33%) and problem-solving exercises (29%) were viewed as the most preferred training methods for these tasks. On-site training in the agency was strongly preferred (88%).

Almost three-fourths (73%) of the task responses showed that the tasks were within the lower levels of the cognitive domain. This makes the tasks more appropriate for inclusion in existing training and for distance and modular approaches to serve as adjuncts to existing training.

Several gaps were identified where the criticality levels were high and the degree to which the tasks was accommodated by existing training was low. Some of these gaps seemed to fall within the general area of "planning." During the next phase of curriculum development, these tasks will be disaggregated into the disciplines for suggestions of training, with the highest priority going to those tasks where criticality is high.

The discipline-specific tasks below show the summary statistics for each task.

TASKS	Disc & #	%Accom	Criticality
Apply the resource allocation plan (EMA)	ema01	56.67	5.00
Assure vital information about the incident is effectively shared with all agencies (EMA)	ema02	55.00	4.67
Coordinate a large scale multi-jurisdictional/regional incident (EMA)	ema03	61.67	5.00
Coordinate all mitigation activities (EMA)	ema04	38.33	3.67
Coordinate evacuation/sheltering and protect in place activities (EMA)	ema05	45.00	4.67
Coordinate human services to include shelter, health, and welfare for emotional and physical needs (EMA)	ema06	73.33	4.67
Coordinate local WMD training for all potential responding agencies (EMA)	ema07	60.00	4.33
Coordinate patient tracking and family assistance activities with the health and medical fields (EMA)	ema08	33.33	4.00
Coordinate public warning, instruction, and information updates (EMA)	ema09	66.67	5.00
Coordinate structural recovery and "cleanup" (EMA)	ema10	33.33	3.33
Coordinate the activities of volunteer agencies, ham radio operators, and community emergency response team (EMA)	ema11	21.67	4.00
Coordinate the development of plans, procedures and protocols for response (EMA)	ema12	56.67	5.00
Coordinate the request, acquisition, distribution, and security of any needed resources (EMA)	ema13	40.00	4.33
Coordinate the request, acquisition, distribution, and security of the national pharmaceutical stock pile (EMA)	ema14	11.67	4.33
Coordinate volunteer organizations' actions and activities (EMA)	ema15	33.33	4.00
Coordinate with public health agencies for surveillance (EMA)	ema16	16.67	4.00
Maintain data inventory of state and local resources (EMA)	ema17	33.33	5.00
Manage and oversee the local or state WMD response and recovery program (EMA)	ema18	40.00	5.00
Participate and coordinate in a "risk assessment" (EMA)	ema19	15.00	4.67
Perform dissemination of information to the public during a WMD event (EMA)	ema20	68.33	5.00
Plan available resources and resources needed for response (EMA)	ema21	48.33	5.00
Develop mutual aid programs and protocols for WMD response (EMA)	ema22	28.33	4.67
Secure facilities during a WMD incident (EMA)	ema23	21.67	4.00
Serve as a liaison and coordinate local, state, and federal assets (EMA)	ema24	40.00	5.00
Train all EMA agency directors, supervisors, and staff in WMD response (EMA)	ema25	33.33	4.00
Design and execute interagency WMD exercises (EMA)	ema26	15.00	5.00
Manage and coordinate the activities of the EOC (EMA)	ema27	55.00	5.00
Participate in "risk assessment" (EMS)	ems01	21.25	3.75
Knowledge of WMD agents(EMS)	ems02	20.00	4.25
Maintain data inventory of state and local resources(EMS)	ems03	22.00	3.33
Understand the use and capability of detection equipment to identify WMD agents(EMS)	ems04	25.00	3.25
Know special dangers of WMD site(EMS)	ems05	20.00	4.25
Administer treatment(EMS)	ems06	30.00	5.00
Identify agents based on signs and symptoms(EMS)	ems07	25.00	4.75
Identify and preserve evidence (EMS)	ems08	15.00	3.50

Perform victim rescue(EMS)	ems09	25.00	4.25
Perform triage (EMS)	ems10	52.00	4.67
Recognize victim signs/symptoms/clusters of potential WMD(EMS)	ems11	25.00	4.25
Support medical monitoring and personnel safety of fire, HAZMAT, and police personnel(EMS)	ems12	55.00	3.75
Transport victims to hospital(EMS)	ems13	62.50	5.00
Use equipment to properly decontaminate victims(EMS)	ems14	42.50	4.00
Identify and preserve evidence (Fire)	fir01	61.67	4.67
Perform victim rescue(Fire)	fir02	83.33	5.00
Control the scene(Fire)	fir03	78.33	4.67
Perform hazard control and exposure protection(Fire)	fir04	78.33	4.00
Provide investigative assistance as required(Fire)	fir05	50.00	2.67
Establish hazard control zones(Fire)	fir06	78.33	4.67
Participate in "risk assessment" (Fire)	fir07	45.00	3.67
Be familiar with emergency patient care(Fire)	fir08	55.00	4.33
Be familiar with reference utilization for incident mitigation(Fire)	fir09	66.67	4.00
Know common decontamination terms (mass, technical, and personal) (Fire)	fir10	71.67	3.67
Know how and when to contain victims(Fire)	fir11	66.67	4.00
Know how to function within mass casualty incident operation plan(Fire)	fir12	55.00	4.00
Know how to wear and use appropriate level of PPE, in accordance with OSHA standards(Fire)	fir13	76.67	4.67
Know special dangers of WMD site for perimeter determination(Fire)	fir14	60.00	4.00
Knowledge of WMD agents(Fire)	fir15	55.00	4.33
Maintain data inventory of state and local resources(Fire)	fir16	33.33	3.67
Participate in intelligence sharing(Fire)	fir17	31.67	4.33
Understand the use and capability of detection equipment to identify WMD agents(Fire)	fir18	45.00	4.33
Identify agents based on signs and symptoms(Fire)	fir19	50.00	4.33
Distinguish HazMat/WMD from routine incidents(Fire)	fir20	66.67	4.67
Early recognition of victim's sign/symptoms of WMD(Fire)	fir21	42.50	4.50
Coordinate with PIOs to implement a joint information center system during a WMD incident (GA)	ga01	21.67	3.67
Coordinate, in concert with EMA, emerg services agencies, le, community resources, to exigencies of WMD incidents re: disruption of local activities(GA)	ga02	26.67	4.00
Coordination with EMA to design and execute continuity of public services during an incident(GA)	ga03	16.67	3.67
Develop a public policy vision for community recovery from a WMD incident(GA)	ga04	21.67	4.33
Develop confidence building strategies within management(GA)	ga05	28.33	3.67
Develop contingency plans for integration of state and federal, private resources at WMD incidents (GA)	ga06	33.33	4.67
Maintain data inventory of state and local resources(GA)	ga07	16.67	4.00
Perform dissemination of information to the public during a WMD event(GA)	ga08	21.67	3.67
Understand and exercise as appropriate emergency powers and declarations among local, state, private, and federal entities(GA)	ga09	23.33	4.67
Understand role and responsibilities during a WMD incident(GA)	ga10	26.67	5.00
Work with public information officials to develop and relay information and directives to the public(GA)	ga11	10.00	4.33
Administrative documentation completion (Global)	global01	45.83	3.89
Conduct Personnel rehabilitation(Global)	global02	41.94	3.89
Conduct/collect and share post-incident evaluation and documentation for ""Lessons Learned"" (Global)	global03	43.33	4.17
Cost recovery(Global)	global04	30.83	3.50
Develop a media-management plan(Global)	global05	43.61	4.11
Develop a plan to secure facilities during a WMD incident(Global)	global06	32.22	4.17
Implement a media management plan integrated with other agencies consistent with that of the government administration(Global)	global07	27.78	3.83
Personnel Utilization Considerations(Global)	global08	42.50	4.39
Understand role of agency in the EOC(Global)	global09	37.78	4.06
Make appropriate communication to other agencies(Global)	global10	45.28	4.22
Use self-protection strategies(Global)	global11	56.67	5.00
Vehicle/equipment restoration(Global)	global12	41.94	3.89
Develop a plan to establish alternative facilities and redundant capability during a WMD incident(Global)	global13	30.28	4.00
Develop plans for response to WMD(Global)	global14	33.89	4.89
Integrate volunteers, community groups, and individuals expertise, as appropriate, into the WMD response plan(Global)	global15	26.67	3.61
Participate in an awareness training program(Global)	global16	51.39	4.78
Revise plans based on lessons learned(Global)	global17	36.11	4.11
Understand decontamination equipment(Global)	global18	45.83	4.44
Understand glossary of WMD terminology(Global)	global19	41.67	3.67
Understand Incident Command System(Global)	global20	57.78	4.67
Understand state and federal assets available to assist in a WMD incident(Global)	global21	30.00	4.06
Understand transfer of command protocol(Global)	global22	49.17	4.17

Coordinate with law enforcement for security and fire/hazMat for decontamination (HC)	hc01	35.00	4.00
Develop a decontamination strategy to address single, multiple and mass patients(HC)	hc02	35.00	4.50
Develop plans for Communication of operational status internally and externally with EMA and EOC(HC)	hc03	35.00	5.00
Develop plans for Facility security(HC)	hc04	50.00	5.00
Develop plans for Fatality management(HC)	hc05	35.00	4.50
Develop plans for Illness, injury and line of duty death of personnel(HC)	hc06	32.50	4.50
Develop plans for Inclusion of outside-volunteer health care professionals(HC)	hc07	15.00	3.50
Develop plans for Mass medication of staff(HC)	hc08	15.00	4.00
Develop plans for Medical surveillance of victims(HC)	hc09	25.00	4.50
Develop plans for Mental health support for victims, family, and staff(HC)	hc10	25.00	4.00
Develop plans for Personal effects collection and handling(HC)	hc11	40.00	4.00
Develop plans for Specimen transfer to outside laboratories(HC)	hc12	25.00	4.00
Develop plans for Supplementing needed resources using traditional practices (i.e. vendors), and EMA and ESF 8(HC)	hc13	25.00	4.00
Develop plans for Utilization of outside local and state and federal resources (DMAT, NMRS) (HC)	hc14	25.00	4.00
Establish triage and treatment protocols for use in catastrophic circumstances(HC)	hc15	50.00	5.00
Have necessary equipment and training for decontamination(HC)	hc16	15.00	4.50
Know how and when to use medical references(HC)	hc17	75.00	3.50
Know how to wear and use the appropriate level of PPE(HC)	hc18	25.00	4.50
Know when to isolate victims(HC)	hc19	35.00	4.00
Participate in "risk assessment"(HC)	hc20	25.00	4.00
Participate in medical surveillance program in conjunction with EMA and public health(HC)	hc21	15.00	4.00
Recognize and preserve evidence(HC)	hc22	25.00	3.50
Recognize signs and symptoms of WMD agents through clinical assessment and obtaining presumptive diagnosis(HC)	hc23	35.00	5.00
Recognize Victim Symptoms of potential WMD(HC)	hc24	25.00	4.50
Understand decontamination equipment(HC)	hc25	25.00	4.50
Understand the magnitude of WMD influence on health care and practitioners(HC)	hc26	25.00	4.50
Use decontamination equipment(HC)	hc27	25.00	4.50
Participate in "risk assessment" (HAZ)	hz01	92.50	5.00
Be familiar with reference utilization for incident mitigation(HAZ)	hz02	85.00	5.00
Be familiar with emergency patient care(HAZ)	hz03	66.25	4.50
Coordinate clean up with a contractor(HAZ)	hz04	62.50	3.25
Develop an incident action plan(HAZ)	hz05	76.25	4.50
Know and apply scene control procedures(HAZ)	hz06	85.00	5.00
Know common decontamination terms (mass, technical, and personal) (HAZ)	hz07	78.75	4.00
Conduct agent control/containment(HAZ)	hz08	88.75	4.50
Perform medical monitoring and personnel safety of fire, HazMat, and police(HAZ)	hz09	85.00	4.25
Perform post-exposure medical surveillance(HAZ)	hz10	63.75	3.25
Provide site assessment and remediation(HAZ)	hz11	71.25	4.25
Provide technical information/recommendations to special operations teams from other agencies(HAZ)	hz12	57.50	4.25
Support investigation of WMD incident(HAZ)	hz13	46.25	4.00
Know how and when to contain victims(HAZ)	hz14	50.00	3.00
Identify and preserve evidence(HAZ)	hz15	53.75	4.00
Perform victim rescue(HAZ)	hz16	80.00	4.75
Control the scene(HAZ)	hz17	85.00	4.75
Perform hazard control and exposure protection(HAZ)	hz18	85.00	4.75
Provide investigative assistance as required(HAZ)	hz19	38.75	3.75
Establish hazard control zones(HAZ)	hz20	88.75	4.75
Know how to function within mass casualty incident operation plan(HAZ)	hz21	57.50	4.25
Know how to wear and use appropriate level of PPE, in accordance with OSHA standards(HAZ)	hz22	92.50	5.00
Know special dangers of WMD site for perimeter determination(HAZ)	hz23	58.75	4.75
Knowledge of WMD agents(HAZ)	hz24	58.75	4.50
Maintain data inventory of state and local resources(HAZ)	hz25	50.00	3.75
Participate in intelligence sharing(HAZ)	hz26	25.00	4.00
Understand the use and capability of detection equipment to identify WMD agents(HAZ)	hz27	71.25	5.00
Identify agents based on signs and symptoms(HAZ)	hz28	58.75	4.75
Distinguish HazMat/WMD from routine incidents(HAZ)	hz29	67.50	5.00
Early recognition of victim’s sign/symptoms of WMD(HAZ)	hz30	58.75	4.50
Coordinate intelligence collection (LE)	le01	32.50	4.25
Direct threat assessment(LE)	le02	32.50	4.25
Joint, regular training with other agencies(LE)	le03	35.00	4.00
Know and recognize types of agents(LE)	le04	25.00	4.50
Know how and when to operate diagnostic equipment(LE)	le05	11.25	3.50
Know self-protection strategies(LE)	le06	25.00	4.75
Know when to perform the "hand-off" within the ICS system(LE)	le07	20.00	4.50
Maintain certifications and training in compliance with OSHA and other regulations (LE)	le08	20.00	3.50

Understand special hazards of a terrorism incident(LE)	le09	28.75	4.50
Use reference material to determine appropriate PPE to wear(LE)	le10	20.00	4.00
Write agency plan for response for different jobs within law enforcement and integrates with plans from other agencies(LE)	le11	20.00	3.75
Participate in "risk assessment"(LE)	le12	15.00	4.00
Know how to wear and use appropriate level of PPE, in accordance with OSHA standards(LE)	le13	32.50	4.25
Know how and when to contain victims(LE)	le14	20.00	3.50
Collect and preserve evidence(LE)	le15	32.50	4.50
Conduct special operations in a hazardous environment(LE)	le16	20.00	4.75
Integrate criminal investigation with epidemiological investigation(LE)	le17	3.75	4.75
Investigate the incident(LE)	le18	28.75	4.50
Perform limited mitigation (LE)	le19	20.00	4.00
Perform render/safe procedures(LE)	le20	45.00	5.00
Provide site security(LE)	le21	50.00	4.00
Recognize a terrorist incident(LE)	le22	37.50	4.50
Recognize evidence(LE)	le23	38.75	4.00
Recognize the need to decontaminate people and animals (process and terminology) (LE)	le24	28.75	4.00
Search for additional devices(LE)	le25	23.75	4.00
Assist in establishing the site perimeter, based on agent (PH)	ph01	.00	2.00
Assist with coordination of clean-up contractors(PH)	ph02	15.00	2.00
Communicate with the public about reoccupation and resumption of normal activity(PH)	ph03	15.00	4.00
Conduct isolation(PH)	ph04	15.00	4.00
Conduct local pharmacy inventory of available meds and medical supplies in conjunction with the EMA(PH)	ph05	.00	4.00
Coordinate with EMA and other medical agencies to perform resource inventory of meds, ventilators, and beds available for use during an incident(PH)	ph06	25.00	4.50
Develop a mass fatality management plan in coordination with the EMA, medical examiner, and law enforcement(PH)	ph07	15.00	5.00
Develop a mass medication/immunization plan(PH)	ph08	15.00	5.00
Develop a plan for dealing with agency personnel, injury, illness or line of duty death(PH)	ph09	50.00	4.00
Develop a plan for health care personnel who volunteer during an incident(PH)	ph10	25.00	4.00
Develop a plan in conjunction with hospitals, and ATSDR, for medical surveillance and long-term evaluation of incident victims(PH)	ph11	15.00	3.50
Develop a plan in conjunction with the EMA for requesting, acquiring, securing, and distributing the national pharmaceutical stock pile(PH)	ph12	15.00	4.00
Develop a public health resource allocation plan(PH)	ph13	15.00	4.00
Develop alternative care facilities plan in coordination with EMA(PH)	ph14	25.00	4.50
Develop a mass medication administration plan for the agency personnel (internal) (PH)	ph15	15.00	4.00
Develop passive and active surveillance strategies(PH)	ph16	15.00	4.00
Establish an ICS plan for the agency(PH)	ph17	25.00	4.50
Formulate a plan for impact/threat analysis(PH)	ph18	15.00	4.00
Integrate epidemiological investigation and monitoring with CDC, WHO, and other US and international agencies(PH)	ph19	.00	4.00
Integrate with poison control centers, the release of information to hospitals, EMS, and other health care providers and the public(PH)	ph20	15.00	5.00
Know self-protection strategies(PH)	ph21	25.00	4.50
Know signs and symptoms of WMD agents(PH)	ph22	15.00	4.50
Know when and how to implement isolation, containment, and quarantine decisions(PH)	ph23	15.00	4.00
Know when to wear and use appropriate levels of PPE(PH)	ph24	25.00	4.50
Make assessment and treatment recommendations to hospitals and clinicians in the community(PH)	ph25	15.00	5.00
Make recommendations concerning the need for mass medication and immunization(PH)	ph26	15.00	4.00
Perform initial and on-going epidemiological study(PH)	ph27	15.00	4.00
Provide technical advice to command(PH)	ph28	15.00	4.00
Recognize patterns to infer threats or potential WMD incidents(PH)	ph29	15.00	4.00
Recognize the severity of the impact of WMD agents on the health and well-being of the community(PH)	ph30	15.00	4.00
Understand decontamination equipment(PH)	ph31	15.00	4.00
Understand magnitude of WMD influence on public health(PH)	ph32	15.00	4.00
Understand state and local authority to implement isolation, containment, and quarantine(PH)	ph33	.00	4.00
Use decontamination equipment for cleanup(PH)	ph34	15.00	4.00
Utilize the detection of monitoring equipment and coordinate the collection of laboratory analysis(PH)	ph35	15.00	4.00
Work with public information officials to develop and relay information and directives to the public(PH	ph36	15.00	4.00
Coordinate with EMA to support interagency and interjurisdiction communications (PSC)	psc01	33.75	4.00
Coordinate with other agencies to ensure radio interoperability, and other communication systems during a WMD incident(PSC)	psc02	26.25	4.25
Recognize the WMD implications of new technologies (such automatic vehicle locators which may trigger a detonation) (PSC)	psc03	7.50	3.50

Understand the media-management plan(PSC)	psc04	20.00	3.25
Recognize the possibility of WMD incident occurrence through calls for service, dispatch patterns, and signs and symptoms(PSC)	psc05	25.00	4.50
Assess vulnerability to WMD (PW)	pw01	21.67	4.67
Become familiar with characteristics of WMD events (identifying an explosive event, for example) (PW)	pw02	26.67	4.67
Conduct a "vulnerability assessment" for infrastructure impact(PW)	pw04	21.67	4.33
Conduct post-incident assessment of damages, and develop short-term and long-term recovery strategies(PW)	pw05	38.33	4.33
Cross-train technical support personnel(PW)	pw05	33.33	4.00
Develop a plan for continuity of services(PW)	pw06	43.33	4.00
Develop an equipment decontamination program(PW)	pw07	32.50	4.00
Develop mutual aid programs and protocols for WMD response(PW)	pw08	33.33	3.67
Develop teams to support USAR teams(PW)	pw09	15.00	3.67
Generate a system analysis for everyday operations(PW)	pw10	48.33	3.67
Know when and how to notify other agencies(PW)	pw11	55.00	4.00
Knowledge of the impact of WMD(PW)	pw12	21.67	4.33
Participate in response plan(PW)	pw13	55.00	5.00
Recognize/distinguish devices as WMD threats(PW)	pw14	28.33	4.67
Understand the benefits of advanced electronics utilization(PW)	pw15	15.00	3.33
Understand the environmental aspects of a WMD event in addressing the recovery of the infrastructure(PW)	pw16	21.67	4.00
Perform contaminated debris management for evidentiary and safety purposes(PW)	pw17	38.33	4.67

INSTRUCTIONS FOR SME QUESTIONNAIRE

The attached questionnaires, one set (page) of questions per task, are designed to validate information accumulated to date and refine tasks, learning objectives, and training methods. While there is no precise formula for determining any of these elements, we believe that through the use of Subject Matter Experts and focused, consolidated information gathering approaches, we can determine the most appropriate approaches in WMD training.

There are two distinct aspects of the questionnaire: the abstract elements (refining the tasks that ought to be among the unique or unusual knowledge, skills, and abilities of a discipline's preparation for and response to WMD incidents, including the most appropriate methods for training professionals to perform those tasks), and the concrete (the degree to which the training or the skills already exist in the discipline). It is essential that definitions be articulated for some of the terms so that there will be shared understanding of the questions. It will also be useful to provide a brief explanation of the process which has produced the information you are receiving. We are operating under the belief that if the process is a good one, the products should be good. At times this process may appear redundant but we believe that validation and verification flows from duplication at certain critical points.

First consider the Definitions on the attached sheet, then peruse the Process description. One of the questionnaires has been completed and is attached to show the preferred method. We expect to collect and collate multiple copies of each questionnaire so uniformity is important.

Should there be questions about the definitions, process, or questionnaires, please feel free to contact either Bill Pelfrey or Sarah Smiley for procedural questions. You might also consider contacting the Subject Matter Expert(s) whose participation in an earlier stage contributed to the development of the tasks. These SMEs are listed in the section titled "Progress to Date" below.

Definitions Applicable to the SME Questionnaires

Disciplines: Those agencies, organizations or groups considered most prominent preparation and response to an incident or suspected incident of WMD.

Tasks: The knowledge, skills, and abilities needed by persons preparing for or responding to a WMD incident, over and above the knowledge, skills, and abilities they possess as a member of their discipline or profession.

Taxonomy Categories: According to training and education literature, learning objectives should be defined for each task. These learning objectives should be consistent with educational objectives which are either cognitive (Recall or recognition of knowledge and the development of intellectual abilities and skills), affective (changes in interest, attitudes, and values), or psychomotor (development of manipulative or motor-skills which are neuromuscular or physical and involve different degrees of physical dexterity). The most prominent taxonomies or objectives organized in hierarchical form, are attached. Additionally, a sheet showing verbs "suggesting" particular levels of the taxonomies is also attached but care should be taken in relying only on this sheet. The other sheets provide far more specific information and guidance in correctly positioning tasks into the correct level of learning objectives.

Training Methods: Based on the taxonomy level, there are some methods of training and instruction which appear to be preferred. Generally, the methods are:

> **Self-paced Readings, Videos, and Classroom Lectures** - Learner in passive role, information able to be verbalized.
> **Discussion** (Classroom) - Learner in a more active role, feedback immediate
> **Problem-solving Exercises** - Active learning with problem solving skills reinforced
> **Programmed Learning** - material organized and presented in sequential, modular fashion.
> **Projects and Exercises** - Active, may involve simulations, involves problem-solving, applications.
> **Demonstrations** - Passive learning for more complex skills, psychomotor especially.

Training Sites: Below are the categories of training sites used here. Alternatives can be suggested in the questionnaire by the SME.

> **Central Location Training**: Some training courses are best offered in central locations. The reasons for transporting participants to central or regional locations can include issues such as models, rare equipment, instructional continuity, and the like.
> **On-site Training**. This traditional method could be offered at agency-specific locations, jurisdiction-specific locations, or regionally. Traditional methods are most appropriate for many clientele but time and travel restrictions may limit the audience.
> **TV/Video Instruction**. Many agencies and clientele would find it difficult if not impossible to attend training sessions of sufficient length to address the issues but could best utilize structured training. Capsulated training or instructional vignettes may be most appropriate for some audiences, depending on the sensitivity of the topic and the information.

Computer-based Instruction. This method may incorporate Internet instruction with the now established computer-based models for delivery of instruction to different audiences. This approach offers the most flexibility for the clientele but may compromise interaction, demonstration, and feedback.

Testing or Validating Performance: Typically, it is necessary to determine the degree to which the learner has become competent in the task. Several methods, based on the training literature, are listed. All that are acceptable methods can be identified and other methods not listed can be added for each task.

Criticality of Performance: Under the presumption that all tasks are not of equal criticality or importance, the scale used will assist in be certain that the most critical tasks are included in core instruction. In this regard, "criticality" refers to degree to which the task is important to the discipline or most professionals in the discipline.

Strategic Tasks: Tasks that are considered "Strategic" would be those associated with a plan, design, frame, project, or forecast.

Tactical Tasks: Tasks that are considered "Tactical" would be those associated with actions to execute; dispatch; proceed with, discharge; carry on, carry through, carry out, carry into effect, or put into effect.

Process to Date

(Included in the Instructions for the Survey)

Disciplines and Tasks were initially identified through a variety of assessment processes, some elaborate and quantitative, others based on focus groups and strategic planning sessions. At each iteration, the disciplines and tasks have been reevaluated by staff and Subject Matter Experts. The most recent effort to identify the disciplines and tasks involved the staff of ODP and the following Subject Matter Experts:

Craig DeAtley
Myra Sochel
Steven Khur
Daryl Louder
Mark Oxley
John King
Joe Saitta
Mark McCain
Bill May

These SMEs represented each of the disciplines, sometimes multiple disciplines, associated with WMD events. During a two-day session, the disciplines were identified and defined, then each discipline was subjected to the examination and discussion of all of the SMEs. The result was a list of tasks believed to be comprehensive, applicable to WMD incidents, and exclusive of preparatory work the professionals already possessed. Specifically excluded were knowledge, skills, and abilities professionals possessed independent of WMD incident needs. One of the last important issues

addressed in the meeting was the exclusion of any tasks which were not unique to WMD incidents, thus including only those which are created by virtue of such an incident.

The next step in the process, begun with these questionnaires, is the linkage of the tasks with the educational objectives, appropriate methods and location of training, criticality of the training, and performance measures. Once that information is gathered and validated, the tasks will be collected into curricula and modules for instruction developed, generally moving from the least complex to the most complex but keeping core tasks central. Determination of gaps between the expert-developed, validated training objectives and the existing courses produced under the initial curriculum will lead to the development of the most appropriate, comprehensive curriculum available. Once implemented, evaluations and continuing assessment will result in revisions and refinements, as is the case in every curriculum.

Completion of each Task Questionnaire

It is suggested that each SME consider the definitions, the process and the attached materials associated with the taxonomies to become familiar with the terms and terminology used here. Next, each task should be considered in steps consistent with the numbered question, consistent with the comments below:

1. Considering the task stated briefly in bold, re-write the task using phrases, terms, or synonyms which will be used to be sure each SME is addressing the same knowledge, skills, and activities.

2. Considering the taxonomies, along with the presumptive level, shown in italics, comment on whether you agree or disagree with the placement of the task in that category. If you disagree, identify an alternate level in one of the taxonomies. It should be recognized that this presumptive level has **not** been validated and, while it is defensible, it is proposed based only on the discussions from other meetings. There should be no perception of finality in the presentation of the presumed level and SMEs should feel free to recommend other levels.

3. Considering the training methods, validate or provide alternatives to the method(s) listed.

4. Based on what you feel to be the most appropriate (balancing efficiency with effectiveness) identify the site you would recommend for training in that task.

5. The most appropriate testing method to show performance or competency should flow logically from the previous items. No items are presumed as most appropriate since there may be some changes recommended in the previous items. Mark as many as you feel are appropriate but please be parsimonious in identifying these methods. Ultimately, curricula will have to show one or a very few of these methods as part of evaluation and your guidance will be useful in being certain the appropriate methods are identified.

6. On a scale of "Not Important" to "Essential" indicate your opinion of the criticality of this task. Not all tasks are as critical to the discipline or a majority of the professionals in the

discipline and it is important that we understand the relative importance or criticality of tasks so that core tasks can be emphasized and adjunct tasks can be available through modules or other means.

7. Considering what you know about the prevalence of training in certain tasks for "most" professionals in the discipline, indicate the degree to which training is already available through sources other than ODP/WMD related training. Note the direction of the scale - from "Training does not Currently Exist" to "Already part of All Training."

8. Identifying training as "Strategic" or "Tactical" assist us in understanding the tiers of personnel associated with a task.

9. Considering all of the information you were asked to provide in the other questions, note any additional elements, refinements, or revisions in the task, the category, the training methods, sites, performance measures or criticality you think is important. Every part of every questionnaire will be studied to gather information you think is important. Marginal notes, comments on the back of sheets, and additional sheets will be considered in collating information. If, for example, you feel it is important to note differences in the training needs of operational and administrative personnel for a task, please do so. Everything you say is important and will be utilized to integrate the various response into a clear, concise set of answers to each questionnaire.

We recognize the importance of this task and value the information you provide. We anticipate consistency in responses, however we have planed for diversity. It may be necessary to provide some SMEs with composite responses and gain validation for the responses if there are significant, irreconcilable differences in the responses.

Explanations of Cognitive Taxonomy (Extracted from Benjamin Bloom[1])

Knowledge (recognizing or recalling ideas, material, or phenomena)

Knowledge of terminology: define terms, distinguish words, understand terms and concepts.

Knowledge of Specific Facts: recall facts, dates, recognize events.

Knowledge of ways and means of dealing with specifics:
Familiarity with, conscious of, knowledge of rules, understanding continuity, know developmental categories, recognize range of features, know types, familiar with criteria, know basic elements, know how to attack or address problems, know various techniques.

Knowledge of universals and abstractions in a field:
Know key principles, know major generalizations, be familiar with key laws, recall major theories, understand interrelationships, understand structural organization.

Comprehension(when confronted with a communication, knowing what is being communicated and how to use it)

Translation: translate from symbolic form, read illustrations, read maps, tables, diagrams, graphs to or from verbal forms.

Interpretation: grasp a complete thought or situation, distinguish between appropriate and inappropriate conclusions drawn from a body of data or information, interpret social data, draw conclusions and state them effectively, predict trends.

Application (given a new problem, ability to apply correct abstractions without prompting)
Ability to apply generalizations to problems, ability to apply procedures to problems, skill in applying laws to situations.

Analysis (ability to break down material into constituent parts and detect relationships of the parts)

Analysis of elements ability to recognize unstated assumptions, ability to distinguish facts from hypotheses, skill in identifying motives, distinguish conclusions from the facts supporting conclusions.

Analysis of relationships comprehending interrelationships and order of relationships, recognizing relevant elements for validation, recognize essential facts, distinguish cause-and-effect, detect logical fallacies in arguments.

Analysis of organizational principles:
Recognize form and pattern in actions and behavior, ability to infer purpose or point of view, ability to infer philosophy, ability to recognize bias.

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[1]Bloom, Benjamin S., Max D. Engelhart, Edward J. Furst, Walter H. Hill, and David R. Krathwohl. (1956). Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook 1, Cognitive Domain. New York: David McKay, pp. 25 - 39.

Synthesis (putting together elements and parts to form a whole)

Production of a unique communication	Ability to write creatively, make extemporaneous speeches.
Production of a plan	ability to propose ways to test a concept, integrate diverse concepts into a solution, plan a unit of instruction, design tools or machines.
Derive a set of abstract relations:	Ability to formulate a theory of action, perceive various was to organize actions or elements to address an issue or problem.

Evaluation (making judgments about the value of ideas, works, methods, or solutions)Assessing work, accuracy, or arguments, using certain criteria, comparing facts, theories or generalizations to determine validity; appraise judgments or values.

Description of Psychomotor Taxonomy[2]

Perception	ability to identify based on feel or touch.
Set	able to demonstrate use of simple tool, instrument, or mechanism.
Guided response	able to imitate an observed movement or procedure.
Mechanism	demonstrate mixing or combining of chemicals.
Complex overt response	operate complex or intricate equipment.
Origination	create original exercise, movement, game, or technique.

[2]Simpson, Elizabeth Jane. (1972). "The Classification of Educational Objectives in the Psychomotor Domain." The Psychomotor Domain, Vol. 3. Washington: Gryphon House. Pp. 43-56.

Affective Domain [3]

1.0 Receiving (attending)
- 1.1 Awareness
- 1.2 Willingness to receive
- 1.3 Controlled or selected attention

2.0 Responding
- 2.1 Acquiescence in responding
- 2.2 Willingness to respond
- 2.3 Satisfaction in response

3.0 Valuing
- 3.1 Acceptance of a value
- 3.2 Preference for a value
- 3.3 Commitment (conviction)

4.0 Organization
- 4.1 Conceptualization of a value
- 4.2 Organization of a value system

5.0 Characterization of a value or value complex
- 5.1 Generalized set
- 5.2 Characterization

[3]Krathwohl, David, R., Benjamin S. Bloom, and Bertram B. Masia. (1964). Taxonomy of Educational Objectives: The classification of Educational Goals Handbook II: Affective Domain. New York: David McKay Company.

Cognitive Domain Taxonomy and Verbs

Level	Verbs
Knowledge	identify, specify, state
Comprehension	explain, restate, translate
Application	apply, solve, use
Analysis	analyze, compare, contrast
Synthesis	design, develop, plan
Evaluation	assess, evaluate, judge

Affective Domain Taxonomy and Verbs

Level	Verbs
Receiving	accept, demonstrate awareness, listen
Responding	comply with, engage in, volunteer
Valuing	express a preference for, show concern
Organization	adhere to, defend, synthesize
Characterization by value	show empathy, show ethical consideration
Perception	distinguish, identify, select

Psychomotor Domain Taxonomy and Verbs

Level	Verbs
Set	assume a position, demonstrate, show
Guided Response	attempt, imitate, try
Mechanism	make habitual, practice, repeat
Complex overt response	carry out, operate, perform
Adaptation	adapt, change, revise
Origination	create, design, originate

Cognitive: Recall or recognition of knowledge and the development of intellectural abilities and skills.

Affective: Changes in interest, attitudes, and values, and the development of appreciations and adequate adjustments.

Psychomotor: Develop manipulative or motor-skills which are neuromuscular or physical and

Participate in "risk assessment" (Example of Task Survey Instrument)

Considering the Task above, respond to each of the following items:

1. This task could further be described as (include some text which clarifies the knowledge, skills, or abilities necessary for the performance of the task)
   _____
2. Based on the "taxonomy" categories, this task is consistent with that of "*Interpretation: grasp a complete thought or situation, distinguish between appropriate and inappropriate conclusions drawn from a body of data or information*" Yes__ No__ (If No, Which category does it best fit?_____)
3. The most appropriate method for providing the knowledge, skill, or abilities to perform this task is "Projects and Exercises." Yes__No__(If No, Which method is best?_____)
4. The most appropriate site for providing the knowledge, skill, or abilities to perform this task is "On-site at Agency." Yes ___ No____ (If No, Which site is best?_____)
5. What is the most appropriate method for testing or validating competence / performance related to the task?
   Written Test? Yes____
   Oral Examination? Yes___
   Self-assessment? Yes_____
   Individual (Personal) Demonstration? Yes____
   Small-Group Exercise? Yes___
   Large-Group or Multi-agency Exercise? Yes___
   Other _____(specify)
6. Indicate, on the scale below, the level of "criticality" you associate with someone in your discipline being able to perform this task - How important is the task?

Not Important	Somewhat Important	Useful	Very Important	Essential

7. Select the likelihood that the knowledge, skill, or ability associated with the task is already part of the training received by most professionals in this discipline?

Not Part of Any Existing Training	Part of Very Little Training (5%-25%)	Part of Some Training (25%-45%)	About Half	Part of More than Half of Training (55%-75%)	Part of Most Training (75%-95%)	Already Part of All Training

8. Is this task more "Strategic"___ or "Tactical"____ for someone in your discipline?

9. What additional comments do you have regarding this task (refinements, revisions, etc.):_____

Appendix 2

Tasks by Discipline with Learning Objectives

Appendix 2
Tasks by Discipline with Learning Objectives

EMA Tasks	NAME	Learning Objectives
Apply the resource allocation plan (EMA)	ema01	Understand the assignment or distribution of predesignated resources, based on knowledge of current asset inventory and consistent with priorities established in allocation plan.
Assure vital information about the incident is effectively shared with all agencies (EMA)	ema02	Understand information management and distribution processes to appropriate agencies through situation reports.
Coordinate a large scale multi-jurisdictional/regional incident (EMA)	ema03	Be able to direct the response and recovery activities of multiple jurisdictions. Coordinate and prioritize support in response to a widespread hazard. Understand crisis and consequence management.
Coordinate all mitigation activities (EMA)	ema04	Be able to direct actions and measures before, during and after an incident to prevent or minimize consequences of various hazards. Requires an understanding of threat reduction and vulnerability, based on analysis.
Coordinate evacuation/sheltering and protect in place activities (EMA)	ema05	Know general population protection through consequence analysis. Be able to determine and implement appropriate protective measures, including shelters (public or in place), instructions regarding traffic control, and mass care measures.
Coordinate human services to include shelter, health, and welfare for emotional and physical needs (EMA)	ema06	Know and understand mass care plan implementation through needs assessment

Coordinate local WMD training for all potential responding agencies (EMA)	ema07	Determine appropriate curricula and subject matter. Select and involve all agencies. Design training and levels appropriate for each agency. Assign or obtain instructors. Secure training sites. Implement training. Coordinate and monitor training.
Coordinate patient tracking with the health and medical fields (EMA)	ema08	Know and understand tertiary care capabilities through facilities needs assessment. Match VOAD and other volunteer and government assists with medical care facilities to care for and inform families of victims.
Coordinate family assistance. (EMA)	New	Provide critical services to friends and family of disaster victims, including logistical support (temporary housing, food, etc.), crisis counseling, religious support.
Coordinate public warning, instruction, and information updates (EMA)	ema09	Direct the timely, accurate, and unified release of public information, emergency instructions, and public alerts. Conduct an effective public information campaign, ensuring all releases are coordinated. Develop an organized warning alert information and dispersion process through centralized control and coordination.
Coordinate structural recovery and "cleanup" (EMA)	ema10	Be able to design and implement a program of recovery and restoration of facilities. Coordinate site rehabilitation through assessment and evaluation.
Coordinate the activities of volunteer agencies, ham radio operators, and community emergency response team (EMA)	ema11	Be able to activate, employ, monitor, support, and integrate myriad volunteer groups into emergency operations for response and recovery. Maintain inventory of community resources through local planning participation.
Coordinate the development of plans, procedures and protocols for response (EMA)	ema12	Know and understand crisis and consequence management. Be able to develop an emergency operations plan, integrating the expertise and protocols of various agencies with each other to create a unified approach.
Coordinate the request, acquisition, distribution, and security of any needed resources	ema13	Conduct resource management through data acquisition. Understand material management and logistics.

(EMA)		
Coordinate the request, acquisition, distribution, and security of the national pharmaceutical stock pile (EMA)	ema14	Understand mass prophylaxis, immunization, and catastrophic casualty management through pharmaceutical distribution. Be able to coordinate and facilitate delivery of appropriate pharmaceuticals from stockpile to areas affected.
Coordinate with public health agencies for surveillance (EMA)	ema16	Understand public health system response architecture. Integrate public information campaign with health alert network and provide support to health agencies in wide-area surveillance program. Design or influence a public health surveillance system which focuses on specific B.T. indicators.
Manage and oversee the local or state WMD response and recovery program (EMA)	ema18	Know and understand crisis and consequences management. Be able to integrate plans through centralized development process. Be able to manage and oversee response and recovery.
Participate and coordinate in a "risk assessment" (EMA)	ema19	Be able to manage, through assignment and coordination of SMEs, the collection of data on risk and vulnerability. Organize and assess the data.
Develop mutual aid programs and protocols for WMD response (EMA)	ema22	Organize a process including the identification of desired signatories, arrangement and execution of agreements, development of plans and protocols, training to insure understanding and compliance, examination through exercises, refinement as needed.
Secure facilities during a WMD incident (EMA)	ema23	Understand facilities self defense and protective measures through threat and vulnerability analysis. Understand issues and processes in securing key facilities such as EOC, JOC, hospitals, etc.
Coordinate local, state, and federal assets (EMA)	ema24	Recognize role and responsibilities for serving as central point of coordination from state EOC to incident command, ROC, JOC, or other command cells. Know and be able to impart the

		command and control operational objectives for response to an incident.
Train all EMA agency directors, supervisors, and staff in WMD response (EMA)	ema25	Be able to develop process to give coordinators and decision makers a better understanding of tactical processes, resources needed, and constraints.
Design and execute interagency WMD exercises (EMA)	ema26	Determine skills and capabilities needed. Train and assess those skills. Develop scenarios to address objectives. Execute interagency exercises. Reassess capabilities based on "Lessons Learned."
Manage and coordinate the activities of the EOC (EMA)	ema27	Know and understand EOC operations and plans. Recognize roles and responsibilities as Operations Manger in EOC support of R and R activities for local, regional, county, state areas of responsibility.
Coordinate donations and unsolicited volunteers. (EMA)	New	Establish a strategy for management of receipt for materials and volunteers. Coordinate the presence of unsolicited volunteers.
Collaborate with Public Health and Coordinate Public Health issues related to WMD. (EMA)	New	Serve as coordination point with Public Health on health services and health surveillance issues.

EMS Tasks	NAME	Learning Objectives
Participate in "risk assessment" (EMS)	ems01	Be able to survey a site for possible dangers using required skills and written tools such as check-lists. Analyze the local risks as they relate to EMS capability to respond effectively.
Knowledge of WMD agents (EMS)	ems02	Be aware of military and industrial chemicals which can be used to harm individuals and the environment. Understand the threats and characteristics of biological, nuclear, radiological, and explosive agents and devices.
Knowledge of public and private sector resources (EMS)	ems03	Know what resources exist at the local, state, or federal levels and how they can be accessed and utilized.
Know special dangers of WMD site (EMS)	ems05	Be able to characterize the hazards specific to WMD events. Understand the special dangers a WMD site poses.
Administer treatment (EMS)	ems06	Possess knowledge and skill necessary to assess and treat victims of WMD exposure.
Identify agents based on signs and symptoms (EMS)	ems07	Be able to recognize illness and/or injury caused by different WMD agents based on presenting signs and symptoms. Be able to recognize trends in victim signs and symptoms to indicate a WMD incident. Differentiate WMD casualties from more common illnesses based on agent-specific signs and symptoms.
Identify and preserve evidence (EMS)	ems08	Recognize a crime scene and attempt to preserve its integrity while caring for WMD victims, in order to avoid disturbing evidence.
Perform victim rescue (EMS)	ems09	Be able to extricate victims from site while ensuring self protection by understanding risks and utilizing proper protective measures based on knowledge of agents and toxic effects.
Perform triage (EMS)	ems10	Initially assess the number of victims. Prioritize patients according to severity, resource availability, and likelihood of a positive response to treatment based on WMD-specific criteria.
Support medical monitoring and personnel safety of fire,	ems12	Recognize the need for all personnel to be monitored and rehabilitated. Use patient

HAZMAT, and police personnel (EMS)		care skills to evaluate medical status of personnel based on problem indicators.
Transport victims to appropriate health care facility (EMS)	ems13	Based on needs of patient, quickly and safely transport patients for higher level of care, while maintaining personal protection.
Recognize the need to decontaminate victims properly prior to transport.	ems14	Understand the need for and the process for providing victim decontamination.

Fire Tasks	NAME	Learning Objectives
Identify and preserve evidence (Fire)	fir01	Be able to recognize potential evidence at a WMD/terrorist crime scene, identify the evidence, collect it, protect it, preserve it, and maintain chain of custody
Perform victim rescue (Fire)	fir02	Be able to safely and effectively remove viable patients form a contaminated environment or hazardous area, utilizing appropriate protective measures and available resources.
Control the scene (Fire)	fir03	Understand and identify differences in control zones (I.e. ,hot, warm and cold zones). Secure or isolate the incident scene by managing ingress and egress, preventing contaminated persons from leaving and on-lookers from entering.
Perform hazard control and exposure protection (Fire)	fir04	Describe and demonstrate means of controlling the hazards and protecting exposures at various kinds of WMD incidents. Identify and correctly manage the hazards. Apply the proper techniques to limit harm.
Provide investigative assistance as required (Fire)	fir05	Assist authorities in determining WMD event and, after determination, in the evidence identification and investigation, to include decontamination, lighting, fire protection, air supply, etc.
Participate in "risk assessment" (Fire)	fir07	Recognize and describe the critical factors which must be evaluated in order to determine the risks associated with the incident and determine appropriate actions.
Be familiar with emergency patient care (Fire)	fir08	Based on the Recognize signs and symptoms of specific injury/illness, using available equipment, provide or assist with proper intervention.
Be familiar with reference utilization for incident mitigation (Fire)	fir09	Be familiar with and able to use the applicable reference materials to determine the hazards, properties, isolation areas, appropriate PPE, and mitigation techniques for the agents involved.
Implement decontamination procedures (mass, technical,	fir10	Implement appropriate decontamination based on situational need and available

and personal) (Fire)		resources.
Know how and when to contain victims Fire)	fir11	Be able to describe when it is appropriate to isolate or contain occupants or victims and how it should be accomplished (casualty collection points, holding areas, etc.) until treatment can occur.
Know how to function within mass casualty incident operation plan (Fire)	fir12	Know and understand the discipline-specific role in a Mass Casualty Incident plan. Role may include triage, treatment, transport, management, or support.
Know how to wear and use appropriate level of PPE, in accordance with OSHA standards (Fire)	fir13	Be able to describe the proper PPE for the WMD agent and conditions involved in the incident, consistent with applicable standards. Demonstrate the proper selection, donning and doffing of PPE.
Know special dangers of WMD site for perimeter determination (Fire)	fir14	Understand and demonstrate knowledge of the types of agents, movement patterns, chemistry, and hazards of WMD agents. Apply these elements and factors to the scene and how they affect perimeters, isolation zones, physical properties, and dissemination methods.
Knowledge of WMD agents (Fire)	fir15	Be able to describe, identify, and discuss the properties, actions, hazards, and protective measures for nuclear, biological, chemical, radioactive, incendiary, and explosive products.
Participate in intelligence sharing (Fire)	fir17	Know and understand methods of collecting and sharing intelligence with law enforcement and other emergency response organizations
Understand the use and capability of detection equipment to identify WMD agents (Fire)	fir18	Demonstrate knowledge and understanding of procedures and practices for monitoring and detecting WMD agents or devices using available instruments.
Distinguish HazMat/WMD from routine incidents (Fire)	fir20	Be able to assess and identify a WMD incident from a routine incident based on clues such as outward warning signs, threats, signs and symptoms, presence of hazardous materials or unknown products at the scene.
Know common decontamination terms (mass, technical, and personal) (Fire	New	Know definitions of decontamination terms and describe or demonstrate how each would be used in a WMD incident.

and HAZ)		Know when each would apply.

Governmental Administrator Tasks	**NAME**	**Learning Objectives**
Coordination with EMA to design and execute continuity of government during an incident (GA)	ga03	Be able to use an integrated approach, based on local laws and policy of chief elected officials. Understand the use of existing continuity of government plans.
Develop policy in support of emergency operations.	new	Establish policy and executive orders to meet the exigencies of the incident.
Develop a public policy vision for community recovery from a WMD incident (GA)	ga04	Be able to formulate, in conjunction with other involved jurisdictions, an integrated public policy vision for recovery.
Develop confidence building strategies within management (GA)	ga05	Understand the processes for developing a team approach, able to enhance decision-making skills to be used during a WMD incident.
Understand and exercise as appropriate emergency powers and declarations among local, state, private, and federal entities (GA)	ga09	Review or develop inter-jurisdictional emergency powers agreements. Review legal authorities and define process to execute emergency powers and declare emergency.
Understand role and responsibilities during a WMD incident (GA)	ga10	Be able to synthesize roles and responsibilities of governmental officials with those of emergency management agency officials in orchestrating resources and responses to a WMD incident.

HazMat Tasks	NAME	Objectives
Participate in "risk assessment" (HAZ)	hz01	Describe critical factors that must be evaluated in order to determine risks associated with an incident. Determine appropriate response actions and make recommendations to commanders.
Be familiar with reference utilization for incident mitigation (HAZ)	hz02	Utilize available reference materials to determine the hazards, properties, isolation areas, appropriate PPE and mitigation techniques for agents involved. Recall facts from reference manuals. Make recommendations to EMS for WMD agents. Understand terms and concepts.
Be familiar with emergency patient care (HAZ)	hz03	Provide or assist with patient care based on specific illness or injury and the available resources. Utilize signs and symptoms to triage and treat patients.
Coordinate clean up with a contractor (HAZ)	hz04	Describe critical factors that must be considered or evaluated in order to coordinate the remediation of a WMD site with contractors, law enforcement, health department. Know emergency management and intergovernmental agency relationships and responsibilities.
Apply scene control procedures (HAZ)	hz06	Based on risk assessment, implement effective scene control procedures to protect personnel, control patients, minimize environmental impact. In accordance with agency SOPs.
Know common decontamination terms (mass, technical, and personal) (HAZ)	hz07	Know definitions of decontamination terms and describe or demonstrate how each would be used in a WMD incident. Know when each would apply. Describe and demonstrate means of controlling the hazards and protecting exposures at various kinds of WMD incidents. Identify and correctly manage the hazards. Apply the proper techniques to limit harm.
Conduct agent control/containment (HAZ)	hz08	Utilize offensive and defensive control techniques, such as overpacking, absorb, engineering control, used to minimize the

		risk. Control the spread of WMD agents and protect exposure.
Provide site assessment and remediation (HAZ)	hz11	Know, recognize and describe the factors to be evaluated in order to conduct a site assessment/characterization. Size up all related problems from an event. Prioritize problems. Know methods to clean up. Complete the same process for mitigation and remediation of the site.
Provide technical information/recommendations to command personnel and other agencies. (HAZ)	hz12	Use and understand reference sources. Provide technical information and recommendations regarding hazards, PPE, decontamination, public protection to other agencies. Be able to read maps, tables, diagrams.
Identify and preserve evidence (HAZ)	hz15	Recognize potential evidence at the crime scene of a WMD or terrorist incident and utilize appropriate actions to protect and preserve the evidence. Minimize movement of items, materials, devices, and victims (if possible). Know how to document, package, transfer, and preserve items which may have evidentiary value.
Perform victim rescue (HAZ)	hz16	Utilizing appropriate PPE and safety precautions, remove endangered victims from hazardous area to a place of refuge. Know how to triage victims, prioritizing by survival likelihood. Know resources available.
Support investigation of WMD incident (HAZ).	hz19	Prepare and provide descriptions of the role of investigators from the Fire Marshall or Environmental Crimes group. Prepare briefings and reports on size-up, observations, and actions to assist investigators trying to piece together (investigatively recreate) the incident. Provide PPE, air monitoring, sampling, containment devices, etc. in assistance and support to investigators. Know crime scene preservation, minimize personnel, chain of custody or evidence, all while securing safety.

Establish hazard control zones (HAZ)	hz20	Know and understand resource materials that provide data on the size of zones, SOPs and equipment available to establish control. Understand how material may be spread. Recognize the methods of establishing isolation zones and the factors to be considered, such as, hazards, physical/chemical properties, weather, etc.
Know how to function within mass casualty incident operation plan (HAZ)	hz21	Apply the Mass Casualty Incident SOP. Understand the role of the HazMat tech/specialist at the MCI. Understand team/member responsibilities regarding triage, treatment, transport.
Know how to wear and use appropriate level of PPE, in accordance with OSHA standards (HAZ)	hz22	Understand the capabilities and limitations of PPE in chemical, biological, radiation, incendiary, and explosive events. Be able to don and doff appropriate PPE. Be able to use and work in PPE
Maintain data inventory of state and local resources (HAZ)	hz25	Know resources needed to track WMD events. Be able to develop a list of standard and specialized resources and agencies that may be applicable to a WMD incident. Be able to initiate contacts and develop them as well as the process for accessing the resources.
Participate in intelligence sharing (HAZ)	hz26	Describe methods of collecting and sharing incident intelligence with law enforcement and other emergency response /management agencies. Develop inter-agency relationships and identify key agency contacts and alternate contacts.
Understand the use and capability of detection equipment to identify WMD agents (HAZ)	hz27	Be able to utilize detection equipment appropriate for different agents. Interpret detection results for action levels, control zone determination, PPE determination, and risk assessment.
Identify agents based on signs and symptoms (HAZ)	hz28	Be able to describe the specific physical signs and symptoms of victims exposed to various WMD agents. Recognize the signs and symptoms as warning signs of particular agents. Determine agent or class of agents based on signs and

		symptoms.
Distinguish HazMat/WMD from routine incidents (HAZ)	hz29	Based on outward indications, threats, multiple victims, signs and symptoms, etc., the intentional nature of a WMD incident as opposed to a routine incident. Recognize the need for additional vigilance in such an intentional incident, the need to be aware of secondary devices, evidence, etc.
Integrate activities with EOD (HAZ)	New	Provide technical assistance and other assistance to EOD personnel.
Integrate activities with Law Enforcement on scene and crowd control (HAZ)	New	Coordinate site security efforts by LE with EMS, Fire and HazMat activities inside the warm and hot zones.

Law Enforcement Task	NAME	Learning Objectives
Coordinate intelligence collection (LE)	le01	Know and understand criminal laws, privacy and security issues, applicable to WMD incidents. Recognize interrelationship between information from various sources, collate information, and recognize importance. Be able to share information with other appropriate agencies.
Direct threat assessment (LE)	le02	Be able to assess a situation to determine the dangers and requirements and conduct a vulnerability analysis. Be able to identify criminal elements, capabilities for WMD and likely targets.
Joint, regular training with other agencies (LE)	le03	Conduct training with other agencies to understand assets and sharing capabilities applicable to a WMD incident.
Know and recognize types of agents (LE)	le04	Be able to describe WMD agents, the implications, risks and self-protection levels appropriate to the agents.
Know how and when to operate diagnostic equipment (LE)	le05	Be able to select the appropriate detection equipment, based on the agent and incident, recognize the conditions necessary for operation, recognize the limitations of the equipment, and demonstrate the appropriate use of the equipment and interpretation of the results.
Know self-protection strategies (LE)	le06	Be able to recognize a hazard and select the appropriate PPE to reduce or prevent exposure.
Know when to perform the "hand-off" within the ICS system (LE)	le07	Know how to perform within an ICS system, conditions under which command is to be relinquished.
Maintain certifications and training in compliance with OSHA and other regulations (LE)	le08	Know and understand SOP or certifications related to OSHA and other certifying or training agencies pertaining to WMD events. Obtain instruction and sustain timely knowledge and credentials.
Understand special hazards of a terrorism incident (LE)	le09	Recognize and understand the unusual hazards, problems, and dangers inherent in WMD/terrorist incidents, such as secondary devices, and demonstrate appropriate response to those hazards.

Use reference material to determine appropriate PPE to wear (LE)	le10	Be able to assess situation and refer to HazMat or reference material to determine the appropriate level and use of PPE in an unknown hazard in an emergency situation. Demonstrate the correct selection for deployment of PPE.
Write agency plan for response for different jobs within law enforcement and integrates with plans from other agencies (LE)	le11	Be able to prepare a comprehensive plan for each element of the agency, which also integrates with plans of other related agencies, which provides written guidelines, procedures and protocols for emergency response and coordination during an incident.
Participate in "risk assessment" (LE)	le12	Perform analysis of community and specific target dangers and vulnerabilities. Determine and define vital infrastructures. Recognize and synthesize information related to risk.
Know how to wear and use appropriate level of PPE, in accordance with OSHA standards (LE)	le13	Be able to describe OSHA-compliant PPE, cross-referenced by type of hazard. Demonstrate the appropriate use of PPE.
Know how and when to contain victims	le14	Be able to recognize the appropriate segregation of victims of WMD incidents. Recognize the legal and jurisdictional limitations in securing victims. Recognize levels and options in the segregation of victims and witnesses.
Collect and preserve evidence (LE)	le15	Recognize and apply evidence gathering, maintenance, safeguarding, interpreting, and chain of custody protocols in WMD evidence. Be able to describe the collection and preservation methods.
Conduct special operations in a hazardous environment (LE)	le16	Know and recognize the special dangers and hazards inherent in special operations (SWAT, EOD, etc.) in a hazardous environment of a WMD or potential WMD situation.
Integrate criminal investigation with epidemiological investigation (LE)	le17	Recognize the importance and processes for coordinating investigation techniques with Public Health and Medical Examiner, while establishing areas of responsibility.
Investigate the incident (LE)	le18	Demonstrate ability to gather information and evidence, document the incident and elements of proof necessary for the successful identification and prosecution

		of perpetrators of WMD incidents.
Perform limited mitigation (LE)	le19	Demonstrate understanding of and methods of reducing WMD impact and consequences, regarding property loss, particularly infrastructure, and public safety, based on type of agent, personnel, and equipment availability. Elements include hardening targets, establishment of a perimeter, containment, immediate action, both defensive and offensive.
Perform render/safe procedures (LE)	le20	*Bomb Techs Only*: Understand and apply the FBI guidelines for render safe. Demonstrate the ability to disarm as suspected WMD improvised device, deactivating, neutralizing, or stabilizing the explosive or agent.
Provide site security (LE)	le21	Recognize site security measures to protect responders, victims, general public, property and equipment, based on special hazards. Maintain ingress and egress control and designate control points to keep area secure.
Recognize a terrorist incident (LE)	le22	Be able to explain and recognize the variables which would suggest a terrorist event or a WMD incident.
Recognize the need to decontaminate people and animals (process and terminology) (LE)	le24	Understand types of suspected WMD agents, signs and symptoms, and need for on-site gross decontamination.
Search for additional devices (LE)	le25	Be aware of potential for secondary WMD devices. Ability to recognize, detect, and isolate the devices.

Public Safety Communications Task	**NAME**	**Learning Objectives**
Coordinate with EMA to support interagency and interjurisdictional communications (PSC)	psc01	Understand the need for and processes of developing a joint communications system with emergency management agencies through a multi-jurisdictional system.
Coordinate with other agencies to ensure radio interoperability, and other communication systems during a WMD incident (PSC)	psc02	Understand the need for and processes of developing a joint interoperable communications system with responding agencies through a multi-jurisdictional system.
Recognize the WMD implications of new technologies (such automatic vehicle locators which may trigger a detonation) (PSC)	psc03	Know and recognize the dangers associated with certain advanced technologies in a WMD event. Based on the type of incident, recognize the hazards and effects of communications-driven WMD devices.
Recognize the possibility of WMD incident occurrence through calls for service, dispatch patterns, and signs and symptoms (PSC)	psc05	Be able to distinguish between routine emergency services and requests and those which might represent a cluster or pattern representing a WMD incident. Understand the implications of biological attacks and the need for systems and medical networking and reporting in order to interpret.
Understand how to identify and request additional resources from agencies (PSC)	New	Identify pertinent resources that would be useful to a communications system during a WMD event. Know the process for requesting additional resources from other agencies.
Manage large-scale WMD incidents while maintaining routine activities such as 911 (PSC)	New	Be able to maintain routine communications systems capabilities such as 911. At the same time, process the call volume from a large-scale WMD incident.

Public Works Task	NAME	Learning Objectives
Assess vulnerability to WMD (PW)	pw01	Understand goals, targets, and desired effects of a WMD event. Identify local targets and the threat or risk of attack. Assess vulnerability of the targets to an attack. Through vulnerability assess process, understand the effects of various attacks using various products on the infrastructure of a community.
Become familiar with characteristics of WMD events (identifying an explosive event, for example) (PW)	pw02	Know the characteristics, signs, symptoms, and response procedures for all biological, nuclear, incendiary, chemical, and explosive categories.
Conduct post-incident assessment of damages, and develop short-term and long-term recovery strategies (PW)	pw04	Develop and implement both shot-term and long-term restoration plans and activities.
Cross-train technical support personnel (PW)	pw05	Know and understand the response requirements in a WMD incident. Prepare technical personnel for multi-tasked response.
Develop a plan for continuity of services (PW)	pw06	Recognize the impact of WMD incident on routine services. Understand the operations plan designed to maintain those services.
Develop and implement an equipment decontamination program (PW)	pw07	Know and understand the effects of various agents. Know and understand decontamination equipment. Be able to apply the appropriate equipment to the appropriate agent. Recognize the capability, limitations of equipment.
Develop mutual aid programs and protocols for WMD response (PW)	pw08	Know the public and private resources available for use in response to a WMD event. Develop and implement preexisting mutual aid agreements and prearranged contracts.
Develop teams to support state and federal response assets (i.e., National Guard, US&R, and MMST) (PW)	pw09	Develop and coordinate compatible preparation, response, and recovery. Prepare a plan to integrate external resources into the response plan.
Generate a system analysis for everyday operations (PW)	pw10	Know and understand the extraordinary requirements posed by a WMD incident. Develop a process to review policies and

		procedures to facilitate continuity of operation.
Know when and how to notify other agencies (PW)	pw11	Recognize and catalogue all agencies involved in a WMD event and establish appropriate communication links. Insure the response plan contains notification procedures.
Knowledge of the impact of WMD event on the organization (PW)	pw12	Understand the physical and psychological effects of WMD event's impact on the organization's ability to conduct response and recovery operations.
Participate in response plan (PW)	pw13	Understand the Public Work's role in the WMD response plan.
Recognize/distinguish devices as WMD threats (PW)	pw14	Be able to identify and avoid devices used in WMD events. When identified, understand the proper procedures to be employed.
Understand the environmental impact of a WMD event in the infrastructure recovery process (PW)	pw16	Understand the effects of Biological, Nuclear, Incendiary, Chemical, and Explosive WMD events on the infrastructure and environment. Develop plans and procedures to account for the environmental impacts in the recovery process.
Perform contaminated debris management for evidentiary and safety purposes (PW)	pw17	Understand the contamination effects of various WMD products and the procedures for handling and disposing of them in a legally sufficient manner, maintaining human and environmental safety.
Integrate Public Works operations into incident management structure (PW)	New	Understand the ICS system and the role Public Works plays in that system. Develop operational plans consistent with the Incident Command System.

Global Tasks	NAME	Learning Objectives
Administrative documentation completion (Global)	global01	Be able to prepare concise and accurate reports and communications. Be familiar with all appropriate forms and reports and documents needed during and after an event. Be able to describe the administrative forms and process for completing the forms necessary to document the actions and activities as well as costs during a WMD incident. Be able to complete all administrative paperwork. Prepare, maintain incident logs and integrate into incident reports. Process through the appropriate Emergency Management Agency.
Conduct Personnel rehabilitation and maintain personnel wellness (Global)	global02	Understand the need for and processes for evaluating and refreshing the physical status and emotional needs of responders. Understand the physical and emotional health systems and the procedures appropriate to initiate preventive and corrective measures to offset dysfunction. Understand methods , including rotation, rest, fluids, and nourishment, to be used to restore personnel to pre-incident well-being.
Conduct/collect and share post-incident evaluation and documentation for ""Lessons Learned"" (Global)	global03	Recognize the need and value of conducting a post-incident evaluation. Recognize, gather, and document pertinent historical facts after an action in order to correct deficiencies and expand successes. Critically assess the actions of the organization and its personnel. Disseminate through after-action reports and statements. Engage in information sharing. Determine implications of assessment, particularly in multidisciplinary meetings and critiques.
Cost recovery (Global)	global04	Recognize the need to track, document, and quantify incurred expenses. Understand value of property and costs of restoration of services. Be able to compare extraordinary costs and expenses of WMD incident to those of routine activities. Be able to document

		and file appropriate recovery forms and materials with the appropriate agencies.
Use effective operational security techniques before, during and after a WMD incident.	global06	Develop a list of facilities needed and required during a WMD incident. Recognize the use of each facility. Assess the vulnerability of each facility, in various types of WMD attacks. Be able to apply physical security procedures to facilities, based on WMD event and vulnerability and prioritization of facilities based on criticality. Coordinate and implement on-site security, crowd control, and scene control. Be able to prepare a plan incorporating all of the key steps and issues. Use effective operations security techniques.
Implement a media management plan integrated with other agencies consistent with that of the government administration (Global)	global07	Be able to develop plans for a Joint Information Center. Recognize the difference between "routine" single agency responses and media needs in a WMD incident. Be able to communicate effectively, accurately, and concisely during an incident. Be able to coordinate a joint information system. Develop a strategy for the dissemination of information in a cohesive, unified manner. Integrate the media management plans of other agencies.
Personnel Utilization Considerations (Global)	global08	Based on the type of WMD incident, prepare estimates of the numbers and capacities of personnel to be used in traditional and non-traditional roles. Describe the acquisition and deployment of human resources to efficiently and effectively respond to an event.
Understand role of agency in the EOC (Global)	global09	Understand the role of the EOC during an incident. Recognize the role, duties, and function of the agency representative to the EOC during an event. Understand the agency mission and the relationship to other agencies in order to ensure their effective integration into the EOC.
Make appropriate communication to other agencies (Global)	global10	Understand the information needs of other agencies and the most effective means of communicating with each. Recognize the process for effectively exchanging

		information. Understand communication methods, distribution, and documentation requirements.
Perform a risk assessment to determine and implement appropriate self-protection strategies (Global)	global11	Based on the role in an emergency, understand the dangers and available methods to use self-protection. Demonstrate self-protection measures, such as time, distance, and shielding, that need to be taken at an incident.
Vehicle, equipment and facilities restoration (Global)	global12	Understand the need for and processes of reclaiming serviceability of equipment, facilities, and materials. Understand damage assessment and criteria to make vehicles, facilities, and equipment usable again, particularly if decontamination is needed.
Develop a plan to establish alternate facilities and redundant capability during a WMD incident (Global)	global13	Recognize the need for the development of contingencies for alternative operations sites and back-up systems. Understand the process for securing an alternative or redundant facility during a WMD incident. List the types of facilities that may require alternative capabilities, including ancillary treatment facilities. Recognize the resources available to a jurisdiction and how the resources can best be accessed.
Develop plans for response to WMD (Global)	global14	Assess community vulnerability and community resources. Develop a preparedness and emergency response plan for WMD. Recognize the role and responsibilities of the agency in responding to a WMD event. Determine a process to be used in developing a WMD plan, being certain that the process is flexible enough to address any type of event. Engage in the strategic planning process to formulate the plan.
Integrate volunteers, community groups, and individual expertise, as appropriate, into the WMD response plan (Global)	global15	Recognize the available community resources. Develop a component of the preparedness/response plan to integrate the use of volunteers and community groups during a WMD incident. Coordinate the plans of volunteer agencies such as American Red Cross, Salvation Army, and others, to be certain roles and responsibilities are delineated

		and mutually supportive.
Participate in an awareness training program (Global)	global16	Recognize the need for all personnel to be aware of the hazards of WMD agents and events and responder self-protection. Base the criticality and depth of awareness training on community vulnerabilities and the role and vulnerability of the individual and their agency. Be able to describe common WMD agents and self-protection strategies.
Revise plans based on lessons learned (Global)	global17	Use knowledge acquire fro previous experiences to improve the planning process. Develop a procedure to review post-incident reports and integrate recommendations into preparedness and response plans. Recognize gaps in services and activities.
Understand the need for and the equipment and processes used to perform decontamination. (Global)	global18	Be able to describe the basic and specialized decontamination equipment and process that can be utilized for gross, technical, and personal decontamination at a WMD incident.
Understand glossary of WMD terminology (Global)	global19	Be familiar with agent-specific and incident-specific terminology that is germane to a WMD event. Understand terms and acronyms so that communications among responders, commanders, and staff are clear and concise.
Understand public (local, state, federal) and private sector assets available to assist in a WMD incident (Global)	global21	Be able to develop a list of state and federal agencies and the assets they can provide during and after an incident. Recognize the response times of federal and state agencies and assets in providing support.
Understand agency's Incident Management System and Unified Management System, and the agency's inclusion into a Unified Incident Management (Global)	global20	Recognize the purpose and benefits of an Incident Command System. Recognize the structure used to control an incident site. Be able to identify the components of ICS and how they are organized, to include transfer of command protocol.
Conduct long term medical monitoring and surveillance.	New	Develop a system to ensure the short and long term medical monitoring of personnel exposed to WMD hazards so that any sequela can be addressed in a timely

		fashion.
Develop an incident action plan	New	Development an incident action plan for a simulated incident and coordinate the components of the plan with other response groups and agencies. Know basic elements of planning, addressing problems logically. Know key structures of organizations involved. Write effectively. Integrate diverse concepts into solutions. Formulate a theory of action.

Appendix 3

Task Sheets for Each Discipline

Revised and Approved During Final SME Meeting

- Strike through represents items changed or deleted
- Order number approximates the temporal order of the item in a WMD incident
- Question number corresponds to the number of the item in the Questionnaires
- Pages are in Landscape Format to accommodate the amount of information

EMA Tasks

Order	Q#	EMA Tasks	Importance	% Exist Trng	Trng Mthd	Site	Test	Support	EMA Plns	Field Ops	Dirs	Disc Trng	New Course
~~1~~	~~21~~	~~Plan available resources and resources needed for response~~	~~5.0~~	~~40.0~~	~~Projects& Exercises~~	~~On-site~~	~~Large-gp Small-gp Exercise~~	~~A~~	~~P~~	~~P~~	~~PM~~	~~X~~	
2	1	Apply the resource allocation plan	5.0	35.0	Projects& Exercises	On-site	Small-gp Exercise		P	P	PM	X	
3	25	Train all EMA agency directors, supervisors, and staff in WMD response	4.0	32.5	Program-med Lrng Projects& Exercises	On-site	Small-gp Exercise Demonst	A	P	P	PM	X	
4	27	Manage and coordinate the activities of the EOC	5.0	57.5	Projects& Exercises	On-site	Large-gp Exercise	A	P	P	PM	X	
5	23	Secure facilities during a WMD incident	4.0	25.0	Projects& Exercises	On-site	Small-gp Exercise	A	P	P	PM		X
6	18	Manage and oversee the local or state WMD response and recovery program	5.0	42.5	Projects& Exercises	On-site	Large-gp Small-gp Exercise	A	P	P	PM		X
7	16	Coordinate with public health agencies for surveillance	4.5	0.0	Projects& Exercises	Central On-site	Small-gp Exercise	A	P	P	PM		X
10	19	Participate and coordinate in a "risk assessment"	5.0	15.0	Projects& Exercises	Central On-site	Large-gp Small-gp Exercise	A	P	P	PM		X
~~11~~	~~17~~	~~Maintain data inventory of state and local resources~~	~~5.0~~	~~25.0~~	~~Projects& Exercises~~	~~On-site~~	~~Small-gp Exercise~~	~~A~~	~~P~~	~~P~~	~~PM~~	~~X~~	
12	7	Coordinate local WMD training for all potential responding agencies	5.0	40.0	Projects& Exercises	On-site	Small-gp Exercise	A	P	P	PM	X	
13	6	Coordinate human services to include shelter, health, and	5.0	85.0	Projects& Exercises	On-site	Large-gp Small-gp Exercise	A	P	P	PM	X	

		welfare for emotional and physical needs											
N	N	Coordinate family assistance.						*A*	*P*	*P*	*PM*		
14	8	Coordinate patient tracking and family assistance activities with the health and medical fields	*4.0*	*42.5*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
N	N	Coordinate donations and unsolicited volunteers											
~~15~~	~~15~~	~~Coordinate volunteer organizations' actions and activities~~	~~*4.0*~~	~~*25.0*~~	~~*Projects& Exercises*~~	~~*On-site*~~	~~*Small-gp Exercise*~~	~~*A*~~	~~*P*~~	~~*P*~~	~~*PM*~~	~~*X*~~	
16	11	Coordinate the activities of volunteer agencies, ham radio operators, and community emergency response team	*4.0*	*25.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
~~17~~	~~20~~	~~Perform dissemination of information to the public during a WMD event~~	~~*5.0*~~	~~*85.0*~~	~~*Projects& Exercises*~~	~~*On-site*~~	~~*Large-gp Small-gp Exercise*~~	~~*A*~~	~~*P*~~	~~*P*~~	~~*PM*~~	~~*X*~~ *B*	
18	10	Coordinate structural recovery and "cleanup"	*3.5*	*25.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
21	26	Design and execute interagency WMD exercises	*5.0*	*15.0*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X* *B*	
22	12	Coordinate the development of plans, procedures and protocols for response	*5.0*	*42.5*	*Projects& Exercises*	*Central On-site*	*Large-gp Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
23	3	Coordinate a large scale multi-jurisdictional/regional incident	*5.0*	*75.0*	*Projects& Exercises*	*On-site*	*Large-gp Exercise*	*A*	*P*	*P*	*PM*	*X* *B*	

24	22	Develop mutual aid programs and protocols for WMD response	*5.0*	*35.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
25	24	Coordinate local, state, and federal assets	*5.0*	*35.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X B*	
26	13	Coordinate the request, acquisition, distribution, and security of any needed resources	*4.5*	*17.5*	*Projects& Exercises*	*On-site*	*Large-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
27	14	Coordinate the request, acquisition, distribution, and security of the national pharmaceutical stock pile	*4.0*	*0.0*	*Prob-solv Exercises Program-med Lrng*	*Central On-site*	*Small-gp Exercise Large-gp Exercise*	*A*	*P*	*P*	*PM*		*X*
28	4	Coordinate all mitigation activities	*3.5*	*50.0*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
29	2	Assure vital information about the incident is effectively shared with all agencies	*4.5*	*50.0*	*Prob-solv Exercises*	*Central*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
30	9	Coordinate public warning, instruction, and information updates	*4.0*	*57.5*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
31	5	Coordinate evacuation/sheltering and protect in place activities	*4.5*	*60.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
N	N	Collaborate with Public Health and Coordinate Public Health issues related to WMD	*5.0*	*Unk*									*X*

Job Classifications appropriate to EMA are:

Support - Support staff in EMA

EMA Plns - EMA Planners

Fld Ops - Field Operations personnel within EMA

Dir - EMA Director, CEO

~~State & Adj Jur - State EMA Officials and Other Adjacent Jurisdictions' Official~~

Within the job classifications, the following levels of activity are expected for each task:

A Awareness

P Performance

PM Policy and Management

Final two columns described as:

Disc Trng -Task can be added to existing training in the discipline to accommodate gaps or persons who have not received training on this topic.

B Bridge from existing training to new module or component emphasizing task

New Course - A new course is needed to accommodate the task or tasks.

EMS Tasks

Order	Q#	EMS Tasks	Importance	% Exist Trng	Trng Mthd	Site	Test	EMTB	EMTI	EMTP	Cmd	Disc Trng	New Course
1	2	Knowledge of WMD agents	*4.25*	*20.0*	*Projects& Exercises Program-med Lrng*	*On-Site*	*Written*	*P*	*P*	*P*	*P/M*	*X*	
2	5	Know special dangers of WMD site	*4.25*	*20.0*	*Self-pace Discuss*	*CBI=3*	*Written*	*P*	*P*	*P*	*P/M*	*X*	
~~3~~	~~4~~	~~Understand the use and capability of detection equipment to identify WMD agents~~	~~*3.25*~~	~~*25.0*~~	~~*Demonst*~~	~~*On-Site*~~	~~*Demonst*~~	~~*A*~~	~~*A*~~	~~*A*~~	~~*P/M*~~	~~*X*~~	
4	7	Identify agents based on signs and symptoms	*4.75*	*25.0*	*Self-pace*	*CBI=3*	*Written*	*P*	*P*	*P*	*P/M*	*X*	
5	10	Perform triage	*4.67*	*52.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*P*	*P*	*P*	*P/M*	*X*	
~~6~~	~~11~~	~~Recognize victim signs/symptoms/clusters of potential WMD~~	~~*4.25*~~	~~*25.0*~~	~~*Projects& Exercises*~~	~~*On-Site*~~	~~*Small-gp Exercise Demonst*~~	~~*P*~~	~~*P*~~	~~*P*~~	~~*P/M*~~	~~*X*~~	
7	6	Administer treatment	*5.0*	*30.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise Demonst*	*P*	*P*	*P*	*P/M*	*X*	
8	9	Perform victim rescue	*4.25*	*25.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*P*	*P*	*P*	*P/M*	*X*	
9	13	Transport victims to hospital	*5.0*	*62.5*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*P*	*P*	*P*	*P/M*	*X*	
10	14	Use equipment to properly decontaminate victims	*4.0*	*42.5*	*Discuss*	*On-Site*	*Small-gp Exercise*	*P*	*P*	*P*	*P/M*	*X*	
11	12	Support medical monitoring and personnel safety of fire, HazMat, and police personnel	*3.75*	*55.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*P*	*P*	*P*	*P/M*	*X*	

12	8	Identify and preserve evidence	*3.5*	*15.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*P*	*P*	*P*	*P/M*		*X*
20	1	Participate in "risk assessment"	*3.75*	*21.3*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*A*	*A*	*A*	*P/MP*		*X*
21	3	Maintain data inventory of state and local resources	*3.33*	*22.0*	*Projects& Exercises Program-med Lrng*	*On-Site*	*Small-gp Exercise*	*A*	*A*	*A*	*P/MP*	*X*	

Job Classifications appropriate to EMS are:

EMTB - Basic
EMTI- Intermediate
EMTP- Paramedics
Cmd- Commanders

Within the job classifications, the following levels of activity are expected for each task:

A Awareness
P Performance
PM Planning and Management

Final two columns described as:

Disc Trng -Task can be added to existing training in the discipline to accommodate gaps or persons who have not received training on this topic.

New Course - A new course is needed to accommodate the task or tasks.

Fire Tasks

Order	Q#	Fire Tasks	Importance	% Exist Trng	Trng Mthd	Site	Test	Firefighter	SpecOpns	Cmd	Disc Trng	New Course
1	20	Distinguish HazMat/WMD from routine incidents	*4.7*	*66.7*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*A*	*A*	*A*	*X*	
2	13	Know how to wear and use appropriate level of PPE, in accordance with OSHA standards	*4.7*	*76.7*	*Demonst*	*On-site*	*Demonst Written*	*P*	*P*	*PM*	*X*	
3	19	Identify agents based on signs and symptoms	*4.3*	*50.0*	*Program-med Lrng*	*On-site*	*Written Small-gp Exercise*	*P*	*P*	*P*	*X*	
4	14	Know special dangers of WMD site for perimeter determination	*4.0*	*60.0*	*Discuss*	*On-site*	*Written*	*A*	*A*	*PM*	*X*	
~~5~~	~~6~~	~~Establish hazard control zones~~	~~*4.7*~~	~~*78.3*~~	~~*Projects Exercises*~~	~~*On-site*~~	~~*Small-gp Exercise*~~	~~*P*~~	~~*P*~~	~~*PM*~~	~~*X*~~	
6	3	Control the scene	*4.7*	*78.3*	*Projects Exercises*	*On-site*	*Small-gp Large-gp Exercise*	*P*	*P*	*PM*	*X*	
7	15	Knowledge of WMD agents	*4.3*	*55.0*	*Program-med Lrng*	*On-site*	*Small-gp Exercise*	*A*	*A*	*A*	*X*	
8	18	Understand the use and capability of detection equipment to identify WMD agents	*4.3*	*45.0*	*Projects Exercises*	*On-site*	*Written Demonst*	*P*	*P*	*PM*	*X B*	*X W/o B*
9	10N	Know common decontamination terms and be able to implement appropriate decontamination procedures (mass, technical, and personal)	*3.7*	*71.7*	*Self-pace*	*Distance TV*	*Written*	*P*	*P*	*PM*	*X*	

10	21	Early recognition of victim's sign/symptoms of WMD	*4.5*	*42.5*	*Projects Exercises*	*On-site*	*Written Small-gp Exercise*	*P*	*P*	*PM*	*X*	
11	8	Be familiar with emergency patient care	*4.3*	*55.0*	*Self-pace*	*On-site Distance*	*Demonst Written*	*P*	*P*	*PM*	*X B*	*X W/o B*
12	2	Perform victim rescue	*5.0*	*83.3*	*Projects Exercises*	*On-site*	*Demonst Small-gp Exercise*	*P*	*P*	*PM*	*X B*	
13	11	Know how and when to contain victims	*4.0*	*66.7*	*Discuss*	*On-site*	*Small-gp Exercise*	*P*	*P*	*PM*	*X*	
14	9	Be familiar with reference utilization for incident mitigation	*4.0*	*66.7*	*Self-pace Prob-solv Exercises*	*On-site*	*Demonst Small-gp Exercise Written*	*P*	*P*	*PM*	*X*	
15	4	Perform hazard control and exposure protection	*4.0*	*78.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*P*	*P*	*PM*	*X*	
16	1	Identify and preserve evidence	*4.7*	*61.7*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*P*	*P*	*PM*	*X*	
17	5	Provide investigative assistance as required	*2.7*	*50.0*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*P*	*P*	*PM*	*X*	
20	7	Participate in "risk assessment"	*3.7*	*45.0*	*Prob-solv Exercises*	*On-site*	*Small-gp Exercise*	*P*	*P*	*PM*	*X*	
21	17	Participate in intelligence sharing	*4.3*	*31.7*	*Projects Exercises*	*On-site*	*Demonst Small-gp Exercise*	*A*	*A*	*PM*	*X B*	
22	12	Know how to function within mass casualty incident operation plan	*4.0*	*55.0*	*Projects Exercises*	*On-site*	*Small-gp Large-gp Exercise*	*P*	*P*	*PM*	*X*	
~~23~~	~~16~~	~~Maintain data inventory of state and local resources~~	~~*3.7*~~	~~*33.3*~~	~~*Projects Exercises*~~	~~*On-site*~~	~~*Small-gp Exercise*~~	~~*A*~~	~~*A*~~	~~*PM*~~	~~*X*~~	

Job Classifications appropriate to Fire are:

Firefighter
SpecOpns – Special Operations
Cmd- Commanders

Within the job classifications, the following levels of activity are expected for each task:

A Awareness
P Performance
PM Planning and Management

Final two columns described as:

Disc Trng -Task can be added to existing training in the discipline to accommodate gaps or persons who have not received training on this topic.

B - Indicates existing training can accommodate the task if a bridge is developed or added to existing curricula.

New Course - A new course is needed to accommodate the task or tasks.

Governmental Administration Tasks

Order	GA Tasks Q#		Importance	% Exist Trng	Trng Mthd	Site	Test	Loc GovOff	HR	RiskAd Attny	Oth Funct	Disc Trng	New Course
1	11	Work with public information officials to develop and relay information and directives to the public	4.33	10.0	Projects& Exercises	On-site	Small-gp Exercise Demonst	P	P	P	PM	X B	
2	9	Understand and exercise as appropriate emergency powers and declarations among local, state, private, and federal entities	4.67	23.33	Discuss	Central On-site	Small-gp Exercise	A	A	A	PM	X B	
3	5	Develop confidence building strategies within management	3.67	28.33	Projects& Exercises	On-site	Small-gp Exercise Large-gp Exercise	P	P	P	P	X B	
10	8	Perform dissemination of information to the public during a WMD event (Also Cognitive)	3.67	21.67	Discuss Prob-solv Exercises	Central	Small-gp Exercise	A	A	A	P/ PM	X B	
20	7	Maintain data inventory of state and local resources	4.0	16.67	Program-med Lrng	On-site	Small-gp Exercise Demonst Self-Assesmt	P	P	P	PM	X B	
21	1	Coordinate with PIOs to implement a joint information center system during a WMD incident	3.67	21.67	Projects& Exercises	On-site	Small-gp Exercise Large-gp Exercise	P	P	P	PM	X B	
22	2	Coordinate, in concert with EMA, emergency services agencies, law enforcement, community resources private and public to	4.0	26.67	Projects& Exercises Discuss	On-site	Small-gp Exercise Demonst	P	P	P	PM	X B	

		~~exigencies of WMD incidents regarding disruption of local activities~~											
N	N	Develop policy in support of emergency operations.						*A*	*A*	*A*	*P/ PM*		
22	10	Understand role and responsibilities during a WMD incident	*5.0*	*26.67*	*Projects& Exercises Prob-solv Exercises*	*On-site*	*Small-gp Exercise*	*A*	*A*	*A*	*PM*	*X B*	
23	3	Coordination with EMA to design and execute continuity of public services during an incident	*3.67*	*16.67*	*Projects& Exercises Discuss*	*On-site*	*Small-gp Exercise*	*A*	*A*	*A*	*PM*	*X B*	
24	4	Develop a public policy vision for community recovery from a WMD incident	*4.33*	*21.67*	*Projects& Exercises*	*On-site*	*Small-gp Exercise Demonst Large-gp Exercise*	*P*	*P*	*P*	*P/ PM*	*X B*	
~~25~~	~~6~~	~~Develop contingency plans for integration of state and federal, private resources at WMD incidents~~	~~*4.67*~~	~~*33.33*~~	~~*Projects& Exercises*~~	~~*On-site*~~	~~*Small-gp Exercise Demonst Large-gp Exercise*~~	~~*P*~~	~~*P*~~	~~*P*~~	~~*PM*~~	~~*X B*~~	

Job Classifications appropriate to Governmental Administrators are:

Other Local Governmental officials and staff, including Chief Elected Official
HR (Human Resources, Personnel, Finance)
Risk Administrators, City/County Attorney
Council Members, Other Jurisdictions' Functions (City and County)

Within the job classifications, the following levels of activity are expected for each task:

A Awareness
P Performance
PM Planning and Management

Final two columns described as:

Disc Trng -Task can be added to existing training in the discipline to accommodate gaps or persons who have not received training on this topic.

B - Existing training can accommodate the task if a bridge is installed in the curricula.

New Course - A new course is needed to accommodate the task or tasks.

HazMat Tasks

HazMat Tasks Order	Q#		Importance	% Exist Trng	Trng Mthd	Site	Test	Tech	Cmd	IS	Disc Trng	New Course
1	29	Distinguish HazMat/WMD from routine incidents	*5.0*	*67.5*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=4 Large=1*	*A*	*A*	*A*	*X*	
2	22	Know how to wear and use appropriate level of PPE, in accordance with OSHA standards	*5.0*	*92.5*	*Demonst N=3*	*On-site N=4*	*Demonst N=4*	*P*	*M*	*A*	*X*	
~~3~~	~~24~~	~~Knowledge of WMD agents~~	~~*4.5*~~	~~*58.75*~~	~~*Program Learning N=4*~~	~~*On-site N=2 Central N=2*~~	~~*Writing N=4*~~	~~*A*~~	~~*A*~~	~~*A*~~	~~*X*~~	
4	28	Identify agents based on signs and symptoms	*4.75*	*58.75*	*Program Learning N=4*	*On-site N=4*	*Small-gp N=3 Demo=1*	*P*	*PM*	*A*	*X*	
5	3	Be familiar with emergency patient care	*4.5*	*66.25*	*Program Learning N=4*	*On-site N=4*	*Demonst N=3 Small-gp Exercise N=2*	*P*	*PM*	*P*	*X B*	
6	16	Perform victim rescue	*4.75*	*80.0*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp N=4 Demo=3*	*P*	*PM*	*P*	*X B*	
7	30	Early recognition of victim's sign/symptoms of WMD	*4.5*	*58.75*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=3 Large=1*	*P*	*PM*	*P*	*X B*	
~~8~~	~~14~~	~~Know how and when to contain victims~~	~~*3.0*~~ ***4.5***	~~*50.0*~~	~~*Discuss N=2*~~	~~*On-site N=3*~~	~~*Small-gp Exercise N=2 Large=1*~~	~~*P*~~	~~*P/ PM*~~	~~*P*~~	~~*X*~~	
9	8	Conduct agent control/containment	*4.5*	*88.75*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=3 Large=1*	*P*	*M*	*A*		*X*

~~10~~	~~17~~	~~Control the scene~~	~~*4.75*~~	~~*85.0*~~	~~*Projects Exercises N=4*~~	~~*On-site N=4*~~	~~*Demonst N=2 Small=3*~~	~~*P*~~	~~*M*~~	~~*A*~~	~~*X*~~	
11	6	Know and apply scene *and crowd* control procedures *in conjunction with Law Enforcement*	*5.0*	*85.0*	*Discuss N=2 Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=3 Lg=2 Dem=2*	*P*	*M*	*A*	*X*	
12	20	Establish hazard control zones	*4.75*	*88.75*	*Projects Exercises N=4*	*On-site N=4*	*Large-gp Exercise N=3 Small=4*	*P*	*P/ PM*	*P*	*X*	
~~12~~	~~18~~	~~Perform hazard control and exposure protection~~	~~*4.75*~~	~~*85.0*~~	~~*Projects Exercises N=4*~~	~~*On-site N=4*~~	~~*Small-gp Exercise N=4*~~	~~*P*~~	~~*PM*~~	~~*A*~~	~~*X*~~	
13	7	Know common decontamination terms (mass, technical, and personal)	*4.0*	*78.75*	*Readings Video & Lecture N=4*	*CBI N=3 (App Diff)*	*Writing N=4*	*P*	*P/ PM*	*P*	*X B*	
~~14~~	~~19~~	~~Provide investigative assistance as required~~	~~*3.75*~~	~~*38.75*~~	~~*Projects Exercises N=4*~~	~~*On-site N=4*~~	~~*Small-gp N=4*~~	~~*P*~~	~~*PM*~~	~~*A*~~	~~*X B*~~	
~~15~~	~~23~~	~~Know special dangers of WMD site for perimeter determination~~	~~*4.75*~~	~~*58.75*~~	~~*Discuss N=2*~~	~~*On-site N=4*~~	~~*Small-gp Exercise N=3 Large=2 Writ=3*~~	~~*A*~~	~~*A*~~	~~*A*~~	~~*X*~~	
16	15	Identify and preserve evidence	*4.0*	*53.75*	*Projects Exercises N=4*	*On-site N=4*	*Demonst N=2 Small=3 LgExer=2*	*P*	*PM*	*P*	*X B*	
17	2	Be familiar with reference utilization for incident mitigation	*5.0*	*85.0*	*Program Learning N=3*	*On-site N=4*	*Demonst N=4 Small-gp Exercise N=4*	*P*	*P/ PM*	*A*	*X*	
~~18~~	~~9~~	~~Perform medical monitoring and personnel safety of fire, HazMat, and police~~	~~*4.25*~~	~~*85.0*~~	~~*Projects Exercises N=4*~~	~~*On-site N=4*~~	~~*Small-gp N=2. Lg, Demo, Writ=1*~~	~~*P*~~	~~*P/ PM*~~	~~*P*~~	~~*X*~~	

~~19~~	~~13~~	~~Support investigation of WMD incident~~	~~*4.0*~~	~~*46.25*~~	~~*Projects Exercises N=4*~~	~~*On-site N=4*~~	~~*Small-gp N=4*~~	~~*P*~~	~~*PM*~~	~~*A*~~	~~*X B*~~	
~~20~~	~~10~~	~~Perform post-exposure medical surveillance~~	~~*3.25*~~	~~*63.75*~~	~~*Projects Exercises N=2*~~	~~*On-site N=3*~~	~~*Demons N=2*~~	~~*P*~~	~~*PM*~~	~~*P*~~	~~*X*~~	
21	21	Know how to function within mass casualty incident operation plan	*4.25*	*57.5*	*Projects Exercises N=4*	*On-site N=4*	*Large-gp N=3 Small-gp N=4*	*P*	*PM*	*P*	*X B*	
50	1	Participate in "risk assessment"	*5.0*	*92.5*	*Prob-solv Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=4 Large=1*	*A/ P*	*P/ PM*	*A*	*X*	
51	27	Understand the use and capability of detection equipment to identify WMD agents	*5.0*	*71.25*	*Projects Exercises N=4*	*On-site N=4*	*Demonst N=4 Small-gp N=2*	*P*	*PM*	*A*	*X B*	
52	11	Provide site assessment and remediation	*4.25*	*71.25*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp N=4 Lg=2*	*P*	*PM*	*P*	*X B*	
53	12	Provide technical information/recommendations to special operations teams from other agencies	*4.25*	*57.5*	*Projects Exercises N=4*	*On-site N=3*	*Small-gp N=3 Lg=2*	*P*	*PM*	*P*	*X B*	
54	25	Maintain data inventory of state and local resources	*3.75*	*50.0*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp N=2 Lg=2*	*A*	*PM*	*A*	*X B*	
55	4	Coordinate clean up with a contractor	*3.25*	*62.5*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=4*	*P*	*PM*	*P*	*X*	
~~56~~	~~5~~	~~Develop an incident action plan~~	~~*4.5*~~	~~*76.5*~~	~~*Projects Exercises N=4*~~	~~*On-site N=4*~~	~~*Small-gp Exercise N=3 Dem=2*~~	~~*A*~~	~~*PM*~~	~~*A*~~	~~*X*~~	
57	26	Participate in intelligence sharing	*4.0*	*25.0*	*Projects Exercises N=4*	*On-site N=4*	*Small=3 Large=2*	*A*	*M*	*A*	*X B*	

N	N	Integrate activities with EOD	*4.5*	*25.0*								
N	N	Integrate activities with Law Enforcement on scene and crowd control										

Job Classifications appropriate to HazMat are:

Tech - Technician - Responders, line and tactical personnel

Cmd - Commanders

IS - Incident Support Officials from related jurisdictions or agencies

Within the job classifications, the following levels of activity are expected for each task:

A Awareness

P Performance

PM Planning and Management

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Law Enforcement Tasks

Order	Q#	Law Enforcement Tasks	Importance	% Exist Trng	Trng Mthd	Site	Test	Patrol	SpecOpns	Invest	Cmd	Disc Trng	New Course
1	22	Recognize a terrorist incident	*4.5*	*37.5*	*Discuss Projects& Exercises*	*On-Site*	*Written Small-gp Exercise*	P	P	P	PM	X	
2	9	Understand special hazards of a terrorism incident	*4.5*	*28.75*	*Discuss*	*On-Site*	*Written Small-gp Exercise*	P	P	P	PM	X	
3	6	Know self-protection strategies	*4.75*	*25.0*	*Discuss*	*Central*	*Written Demonst*	P	P	P	PM	X	
4	13	Know how to wear and use appropriate level of PPE, in accordance with OSHA standards	*4.25*	*32.5*	*Demonst Discuss*	*On-Site*	*Written Demonst*	P	P	P	PM	X	
5	10	Use reference material to determine appropriate PPE to wear	*4.0*	*20.0*	*Discuss Program-med Lrng*	*On-Site*	*Written Demonst*	P	P	P	PM	X	
6	4	Know and recognize types of agents	*4.5*	*25.0*	*Self-pace Program-med Lrng*	*Central*	*Written*	P	P	P	PM	X	
7	24	Recognize the need to decontaminate people and animals (process and terminology)	*4.0*	*28.75*	*Program-med Lrng*	*On-Site*	*Written Demonst*	P	P	P	PM	X	
10	25	Search for additional devices	*4.0*	*23.75*	*Prob-solv Exercises Program-med Lrng*	*On-Site*	*Demonst Small-gp Exercise*	P	P	P	PM	X	
13	21	Provide site security	*4.0*	*50.0*	*Demonst Program-med Lrng Prob-solv Exercises*	*On-Site*	*Large-gp Exercise*	P	A	A	PM	X	

8	14	Know how and when to contain victims	~~*3.5*~~ ***4.5***	*20.0*	*Discuss*	*On-Site*	*Written Oral Exm Small-gp Exercise*	P	P	P	PM	X	
~~9~~	~~23~~	~~Recognize evidence~~	~~*4.0*~~	~~*38.75*~~	~~*Programmed Lrng*~~	~~*On-Site*~~	~~*Written Demonst Small-gp Exercise*~~	~~P~~	~~P~~	~~P~~	~~PM~~	~~X~~	
11	19	Perform limited mitigation	*4.0*	*20.0*	*Demonst Projects& Exercises*	*On-Site*	*Demonst*	P	P	P	PM	X	
12	16	Conduct special operations in a hazardous environment	*4.75*	*20.0*	*Demonst Projects& Exercises*	*On-Site*	*Demonst Small-gp Large-gp Exercise*	A	P	P	PM		X
14	15	Collect and preserve evidence	*4.5*	*32.5*	*Demonst Projects& Exercises*	*On-Site*	*Demonst Small-gp Exercise*	P	P	P	PM	X	
15	18	Investigate the incident	*4.5*	*28.75*	*Prob-solv Exercises Program-med Lrng*	*On-Site*	*Written Demonst Small-gp Exercise*	A	P	P	PM	X	
16	5	Know how and when to operate diagnostic equipment	*3.5*	*11.25*	*Demonst Discuss*	*Central*	*Demonst*	P	P	P	P	X	
17	8	Maintain certifications and training in compliance with OSHA and other regulations	*3.5*	*20.0*	*Discuss Projects& Exercises*	*Central*	*Written Demonst*	A	A	A	PM		X
21	2	Direct threat assessment	*4.25*	*32.5*	*Prob-solv Exercises*	*On-Site*	*Demonst*	A	P	A	A/ PM	X	
22	20	Perform render/safe procedures	*5.0*	*45.0*	*Demonst Projects& Exercises*	*Central & Onsite*	*Written Demonst Oral Exm*	A	P	P	PM	X	
23	7	Know when to perform the "hand-off" within the ICS system	*4.5*	*20.0*	*Prob-solv Exercises*	*Central*	*Small-gp Large-gp Exercise*	A	P	A	P/ PM	X	
24	12	Participate in "risk assessment"	~~*4.0*~~ ***5.0***	*15.0*	*Prob-solv Exercises Projects& Exercises*	*On-Site*	*Small-gp Large-gp Exercise*	A	P	P	P/ PM	X	

25	3	Joint, regular training with other agencies	*4.0*	*35.0*	*Projects& Exercises*	*On-Site*	*Small-gp Large-gp Exercise*	P	P	P	P/ PM	X	
26	17	Integrate criminal investigation with epidemiological investigation	*4.75*	*3.75*	*Program-med Lrng Projects& Exercises*	*On-Site*	*Small-gp Large-gp Exercise*	A	A	P	PM		X
27	1	Coordinate intelligence collection	~~*4.25*~~ ***5.0***	*32.5*	*Program-med Lrng Projects& Exercises*	*Central*	*Demonst*	A	P	P	P/ PM	X	
28	11	Write agency plan for response for different jobs within law enforcement and integrates with plans from other agencies	*3.75*	*20.0*	*Projects& Exercises*	*On-Site*	*Demonst*	A	A	A	PM	X	

Job Classifications appropriate to Law Enforcement are:

Patrol - Patrol Officers

SpecOpns - Special Operations including EOD, Aviation, Harbor, etc.

Invest - Criminal Investigations

Cmd- Commanders

Within the job classifications, the following levels of activity are expected for each task:

A Awareness

P Performance

PM Planning and Management

Final two columns described as:

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New Course - A new course is needed to accommodate the task or tasks.

Public Safety Communications Tasks

Order	PSC Tasks Q#		Importance	% Exist Trng	Trng Mthd	Site	Test	TelC	Supvsr	Disc Trng	New Course
1	5	Recognize the possibility of WMD incident occurrence through calls for service, dispatch patterns, and signs and symptoms	*4.5* *5.0*	*25.0*	*Discuss* *Prob-solv* *Exercises*	*On-site*	*Written* *Self-Assesmt* *Small-gp* *Large-gp* *Exercise*	*P*	*PM*		*X*
2	3	Recognize the WMD implications of new technologies (such automatic vehicle locators which may trigger a detonation)	*3.5* *4.0*	*7.5*	*Discuss*	*Distance* *TV*	*Written* *Self-Assesmt* *Small-gp* *Exercise*	*P*	*P*		*X*
3	4	Understand the media-management plan	*3.25* *4.25*	*20.0*	*Discuss*	*On-site*	*Written* *Small-gp* *Exercise*	*A*	*PM*	*X*	
10	1	Coordinate with EMA to support interagency and interjurisdiction communications	*4.0* *4.5*	*33.75*	*Self-pace* *Program-med Lrng*	*On-site* *Central*	*Demonst* *Small-gp* *Large-gp* *Exercise*	*A*	*P*	*X*	
11	2	Coordinate with other agencies to ensure radio interoperability, and other communication systems during a WMD incident	*4.25* *4.75*	*26.25*	*Projects&* *Exercises*	*On-site*	*Demonst* *Small-gp* *Large-gp* *Exercise*	*A*	*PM*	*X*	
N	N	Understand how to identify and request additional resources from other agencies.	*5.0*					*P*	*P/ PM*		

N	N	Manage and coordinate a large scale incident while maintaining routine operations (i.e., 911)	*5.0*					*P*	*P/ PM*		

Job Classifications appropriate to Public Safety Communications are:

TelC - Telecommunicators or operators in communications division

Supsrv - First and second line supervisors of communications personnel

Within the job classifications, the following levels of activity are expected for each task:

A Awareness

P Performance

PM Planning and Management

Final two columns described as:

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Public Works Tasks

Order	Q#	Public Works Tasks	Importance	% Exist Trng	Trng Mthd	Site	Test	Emp	Gen Opn	Plns, Eng	Supvsr Dir	Disc Trng	New Course
1	14	Recognize/distinguish devices as WMD threats	*4.67*	*28.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise Written*	*A*	*P*	*P*	*A*		*X*
2	2	Become familiar with characteristics of WMD events (identifying an explosive event, for example)	*4.67*	*26.7*	*Program-med Lrng*	*On-site*	*Small-gp Exercise Demonst*	*A*	*A*	*A*	*A*		*X*
3	13	Participate in response plan	*5.0*	*55.0*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*P/ PM*	*X*	
4	17	Perform contaminated debris management for evidentiary and safety purposes	*4.67*	*38.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*		*X*
5	7	Develop an equipment decontamination program	*4.0*	*32.5*	*Prob-solv Exercises*	*On-site*	*Demonst*	*A*	*P*	*P*	*PM*	*X*	
21	10	Generate a system analysis for everyday operations	*3.67*	*48.3*	*Prob-solv Exercises*	*Distance TV*	*Small-gp Exercise*	*A*	*A*	*A*	*PM*	*X*	
22	11	Know when and how to notify other agencies	*4.0*	*55.0*	*Discuss*	*On-site*	*Demonst*	*A*	*A*	*A*	*PM*	*X*	
23	12	Knowledge of the impact of WMD	*4.33*	*21.7*	*Program-med Lrng*	*On-site*	*Small-gp Exercise Demonst*	*A*	*A*	*A*	*A*		*X*
24	16	Understand the environmental aspects of a WMD event in addressing the recovery of the infrastructure	*4.0*	*21.7*	*Program-med Lrng*	*On-site*	*Small-gp Exercise*	*A*	*A*	*A*	*PM*	*X*	
25	4	Conduct post-incident assessment of damages, and	*4.33*	*38.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*A*	*A*	*A*	*PM*	*X*	

		develop short-term and long-term recovery strategies					*Self-Assesmt*						
~~26~~	~~15~~	~~Understand the benefits of advanced electronics utilization~~	~~*3.33*~~	~~*15.0*~~	~~*Program-med Lrng*~~	~~*On-site*~~	~~*Demonst*~~	~~*A*~~	~~*P*~~	~~*A*~~	~~*PM*~~		~~*X*~~
31	1	Assess vulnerability to WMD	*4.67*	*21.7*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*		*X*
~~32~~	~~3~~	~~Conduct a "vulnerability assessment" for infrastructure impact~~	~~*4.33*~~	~~*21.7*~~	~~*Projects Exercises*~~	~~*On-site*~~	~~*Small-gp Exercise Demonst*~~	~~*A*~~	~~*P*~~	~~*PM*~~	~~*PM*~~	~~*X*~~	
35	8	Develop mutual aid programs and protocols for WMD response	*3.67*	*33.3*	*Projects Exercises*	*On-site*	*Large; Self-Assesmt*	*A*	*A*	*A*	*PM*	*X*	
33	6	Develop a plan for continuity of services	*4.0*	*43.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*A*	*A*	*A*	*PM*	*X*	
34	5	Cross-train technical support personnel	*4.0*	*33.3*	*Program-med Lrng*	*On-site*	*Small-gp Exercise Written*	*A*	*P*	*P*	*PM*		*X*
36	9	Develop teams to support state and federal response assets (i.e., National Guard, US&R, and MMST)	*3.67* ***4.5***	*15.0*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*A*	*P*	*P*	*PM*	*X*	
N	N	Integrate Public Works operations with the Incident Management structure	*4.0*	*30.0*									

Job Classifications appropriate to Public Works are:

Emp - All Non-operations Employees and staff
Gen Opn - Line personnel and operations supervisors
Pln, Eng - Planners, Engineers, Lab Technicians
Supvsr, Dir - Superintendent or Agency Director
Oth - Other Jurisdictions' or Related Agency Officials

Within the job classifications, the following levels of activity are expected for each task:

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P Performance
PM Planning and Management

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Global Tasks

Order	Q#	Global Tasks	Importance	% Exist Trng	Trng Mthd	Site	Test	Respon	Supp	Spec	Cmd	Disc Trng	New Course
1	16	Participate in an awareness training program	*4.78*	*51.39*	*Self-pace Lecture Video 18*	*Distance TV N=17*	*Written N=12*	*A*	*A*	*A*	*A*	*X*	
2	18	Understand decontamination equipment	*4.44*	*45.83*	*Demonst N=17*	*On-site N=17*	*Demonst N=10 Small=8*	*P*	*A*	*P*	*PM*	*X*	
3	19	Understand glossary of WMD terminology	*3.67*	*41.67*	*Self-pace Lecture Video 18*	*On-site N=13 CBI=4*	*Written N=16*	*P*	*A*	*P*	*PM*	*X*	
N	N	Understand the Integrated Unified Command structure						*A*	*A*	*P*	*P/ PM*		
10	11	Use self-protection strategies	*5.0*	*56.67*	*Demonst N=16*	*On-site N=17*	*Demonst N=15*	*P*	*P*	*P*	*P/ PM*	*X*	
20	14	Develop plans for response to WMD	*4.89*	*33.89*	*Prob-solv Exercises N=14*	*On-site N=17*	*Small-gp Exercise N=10 Large=11*	*A*	*A*	*A*	*PM*	*X*	
N	N	Develop an incident action plan											
~~21~~	~~22~~	~~Understand transfer of command protocol~~	~~*4.17*~~	~~*49.17*~~	~~*Discuss N=17*~~	~~*On-site N=17*~~	~~*Small-gp Exercise N=12*~~	~~*A*~~	~~*A*~~	~~*A*~~	~~*M*~~	*X*	
22	9	Understand role of agency in the EOC	*4.06*	*37.78*	*Prob-solv Exercises N=13*	*On-site N=17*	*Large-gp Exercise N=15 Small=9*	*A*	*A*	*A*	*PM*	*X*	
22	20	Understand Incident Management System AND unified Management System, and the agency's inclusion into a Unified Incident Management	*4.67*	*57.78*	*Discuss N=16*	*Central N=11 Onsite=6*	*Small-gp Exercise N=13 Large=7*	*P*	*A*	*P*	*P/ PM*	*X*	

22	21	Understand public (local, state, federal) and private sector assets available to assist in a WMD incident	*4.06*	*30.0*	*Discuss N=18*	*On-Site N=15*	*Written Small Large Each=6*	*A*	*A*	*P*	*P/ PM*		*X*
~~23~~	~~5~~	~~Develop a media-management plan~~	~~*4.11*~~	~~*43.61*~~	~~*Projects Exercises N=13*~~	~~*On-site N=18*~~	~~*Small-gp Exercise Large=8*~~					*X*	
24	7	Implement a media management plan integrated with other agencies consistent with that of the government administration	*3.83*	*27.78*	*Projects Exercises N=18*	*On-site N=18*	*Large-gp Exercise N=14 Small=9*	*A*	*A*	*A*	*P/ PM*	*X*	
25	6	Use effective operational security techniques before, during and after a WMD incident	*4.17*	*32.2*	*Projects Exercises N=17*	*On-site N=18*	*Small-gp Exercise N=12 Large=11*	*A*	*A*	*A*	*P/ PM*		*X*
26	2	Conduct personnel wellness and rehabilitation	*3.89*	*41.94*	*Prob-solv Exercises N=16*	*On-site N=18*	*Small-gp Exercise N=11*	*P*	*P*	*P*	*P/ PM*	*X*	
27	8	Personnel Utilization Considerations	*4.39*	*42.5*	*Prob-solv Exercises N=16*	*On-site N=18*	*Small-gp Exercise N=14 Large=11*	*P*	*P*	*P*	*P/ PM*	*X*	
28	10	Make appropriate communication to other agencies	*4.22*	*45.28*	*Projects Exercises N=16*	*On-site N=18*	*Large-gp N=14 Small=11*	*P*	*P*	*P*	*P/ PM*	*X*	
29	13	Develop a plan to establish alternative facilities and redundant capability during a WMD incident	*4.0*	*30.28*	*Projects Exercises N=15*	*On-site N=17*	*Small-gp Exercise N=12 Dem=12*	*A*	*A*	*A*	*P/ PM*	*X*	
30	15	Integrate volunteers, community groups, and individual expertise, as appropriate, into the WMD response plan	*3.61*	*26.67*	*Prob-solv Exercises N=17*	*On-site N=18*	*Large-gp N=10 Small-gp N=9*	*A*	*A*	*A*	*P/ PM*		*X*

31	12	Vehicle, equipment, and facilities restoration	*3.89*	*41.94*	*Prob-solv Exercises N=11*	*On-site N=18*	*Demonst N=10*	*P*	*P*	*P*	*P/ PM*	*X*	
32	4	Cost recovery	*3.5*	*30.83*	*Prob-solv Exercises N=14*	*On-site N=15*	*Demonst N=9 Small=8*	*A*	*A*	*A*	*P/ PM*	*X*	
33	1	Administrative documentation completion	*3.89*	*45.8*	*Prob-solv Exercises N=14*	*On-site N=18*	*Demonst N=13*	*A*	*A*	*P*	*P/ PM*	*X*	
34	3	Conduct/collect and share post-incident evaluation and documentation for “Lessons Learned”	*4.17*	*43.33*	*Projects Exercises N=16*	*On-site N=18*	*Small-gp Exercise N=13 Large=10*	*P*	*P*	*P*	*P/ PM*	*X*	
35	17	Revise plans based on lessons learned	*4.11*	*36.11*	*Projects Exercises N=17*	*On-site N=17*	*Small-gp Exercise N=15 Large=7*	*P*	*A*	*P*	*P/ PM*	*X*	
N	N	Conduct long term medical monitoring and surveillance											

Job Classifications appropriate to Global are:

Respon - Responders
Supp - Support Personnel
Spec - Specialists
Cmd- Commanders

Within the job classifications, the following levels of activity are expected for each task:

A Awareness
P Performance
PM Planning and Management

Final two columns described as:

Disc Trng -Task can be added to existing training in the discipline to accommodate gaps or persons who have not received training on this topic.

New Course - A new course is needed to accommodate the task or tasks.

Appendix 4

Gap Analysis Results

Gap Analysis Legend Codes:

Y - We inserted a "Y" in the boxes along the top of the first task for each discipline to show that, "Yes," ODP has an existing course incorporating this task.

YL - This means "Yes, but Limited." The task is technically covered in an existing course(s), but not to the degree necessary to develop proficiency within that job classification.

R - This is our strong recommendation that a new course is required or that an existing course should be enhanced to adequately and appropriately address this specific task.

R L - Recommended that a new course be developed but for certain job classifications

OPSEC - This refers to a course on Operational Security issues.

Evi Co - There are three evidence courses in development directly related to WMD crime scenes - Awareness video, Operations Level, and Technician level.

D - Signifies that the course is currently under development by ODP or, if being developed by another agency, that organization will be listed directly below the "D" in the Gap Analysis box.

D L - Shows that a course is under development but limited to certain job classifications.

O - Means that a course with this task is being provided by some "other" agency listed directly underneath the "O" in the Gap Analysis box. If there is no number afterwards, then the course(s) cover each of the job classifications. If there is a number immediately after the "O", then it covers only that particular job classification.

OPN - Is the Operations level course being developed through CRA for a risk-based response specifically targeting first-arriving units.

RAP - Is the Chemical Protective Clothing course developed through CRA and the New York City Fire Department.

B and BIO - Each mean that a course is recommended - focusing specifically on the biological-related aspect of that task.

NFA - National Fire Academy

Disc	Tasks	Importance	% Exist Trng	Trng Mthd	Site	Test	Disc Trng	New Course	Gap Anal.
EMA	Apply the resource allocation plan	*5.0*	*35.0*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*X*		*R*
EMA	Train all EMA agency directors, supervisors, and staff in WMD response	*4.0*	*32.5*	*Program-med Lrng Projects& Exercises*	*On-site*	*Small-gp Exercise Demonst*	*X*		*R PLN*
EMA	Manage and coordinate the activities of the EOC	*5.0*	*57.5*	*Projects& Exercises*	*On-site*	*Large-gp Exercise*	*X*		*R*
EMA	Secure facilities during a WMD incident	*4.0*	*25.0*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*		*X*	*Y*
EMA	Manage and oversee the local or state WMD response and recovery program	*5.0*	*42.5*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*		*X*	*R PLN*
EMA	Coordinate with public health agencies for surveillance	*4.5*	*0.0*	*Projects& Exercises*	*Central On-site*	*Small-gp Exercise*		*X*	*D PHS*
EMA	Participate and coordinate in a "risk assessment"	*5.0*	*15.0*	*Projects& Exercises*	*Central On-site*	*Large-gp Small-gp Exercise*		*X*	*Y*
EMA	Coordinate local WMD training for all potential responding agencies	*5.0*	*40.0*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*X*		*R*
EMA	Coordinate human services to include shelter, health, and welfare for emotional and physical needs	*5.0*	*85.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*X*		*O PHS FEMA*
EMA	Coordinate family assistance.								*O FED*
EMA	Coordinate patient tracking and family assistance activities with the health and medical fields	*4.0*	*42.5*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*X*		*O PHS FEMA*
EMA	Coordinate donations and unsolicited volunteers								*O FED*
EMA	Coordinate the activities of volunteer agencies, ham radio operators, and community emergency response team	*4.0*	*25.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*X*		*R*
EMA	Coordinate structural recovery and "cleanup"	*3.5*	*25.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*X*		*O FED*
EMA	Design and execute interagency WMD exercises	*5.0*	*15.0*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*X B*		*D NTS/ EMI*

EMA	Coordinate the development of plans, procedures and protocols for response	*5.0*	*42.5*	*Projects& Exercises*	*Central On-site*	*Large-gp Small-gp Exercise*	*X*		*O EMI*
EMA	Coordinate a large scale multi-jurisdictional/regional incident	*5.0*	*75.0*	*Projects& Exercises*	*On-site*	*Large-gp Exercise*	*X B*		*Y*
EMA	Develop mutual aid programs and protocols for WMD response	*5.0*	*35.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*X*		*R*
EMA	Coordinate local, state, and federal assets	*5.0*	*35.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*X B*		*R*
EMA	Coordinate the request, acquisition, distribution, and security of any needed resources	*4.5*	*17.5*	*Projects& Exercises*	*On-site*	*Large-gp Exercise*	*X*		*R*
EMA	Coordinate the request, acquisition, distribution, and security of the national pharmaceutical stock pile	*4.0*	*0.0*	*Prob-solv Exercises Program-med Lrng*	*Central On-site*	*Small-gp Exercise Large-gp Exercise*		*X*	*D PHS*
EMA	Coordinate all mitigation activities	*3.5*	*50.0*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*X*		*O EMI*
EMA	Assure vital information about the incident is effectively shared with all agencies	*4.5*	*50.0*	*Prob-solv Exercises*	*Central*	*Small-gp Exercise*	*X*		*R OPSEC*
EMA	Coordinate public warning, instruction, and information updates	*4.0*	*57.5*	*Projects& Exercises*	*On-site*	*Small-gp Exercise*	*X*		*R* DOE *NWS*
EMA	Coordinate evacuation/sheltering and protect in place activities	*4.5*	*60.0*	*Projects& Exercises*	*On-site*	*Large-gp Small-gp Exercise*	*X*		***R***
EMA	Collaborate with Public Health and Coordinate Public Health issues related to WMD	*5.0*	*Unk*					*X*	*D PHS*
EMS	Knowledge of WMD agents	*4.25*	*20.0*	*Projects& Exercises Program-med Lrng*	*On-Site*	*Written*	*X*		*Y*
EMS	Know special dangers of WMD site	*4.25*	*20.0*	*Self-pace Discuss*	*CBI=3*	*Written*	*X*		*Y*
EMS	Identify agents based on signs and symptoms	*4.75*	*25.0*	*Self-pace*	*CBI=3*	*Written*	*X*		*Y*
EMS	Perform triage	*4.67*	*52.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*X*		*Y*
EMS	Administer treatment	*5.0*	*30.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise Demonst*	*X*		*D O PHS*

EMS	Perform victim rescue	*4.25*	*25.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*X*		*D OPN RAP*
EMS	Transport victims to hospital	*5.0*	*62.5*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*X*		*Y*
EMS	Use equipment to properly decontaminate victims	*4.0*	*42.5*	*Discuss*	*On-Site*	*Small-gp Exercise*	*X*		*D O PHS*
EMS	Support medical monitoring and personnel safety of fire, HazMat, and police personnel	*3.75*	*55.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*	*X*		*Y*
EMS	Identify and preserve evidence	*3.5*	*15.0*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*		*X*	*D FBI*
EMS	Participate in "risk assessment"	*3.75*	*21.3*	*Projects& Exercises*	*On-Site*	*Small-gp Exercise*		*X*	*D OPN RAP*
EMS	Maintain data inventory of state and local resources	*3.33*	*22.0*	*Projects& Exercises Program-med Lrng*	*On-Site*	*Small-gp Exercise*	*X*		*R L*
F	Distinguish HazMat/WMD from routine incidents	*4.7*	*66.7*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*X*		Y
F	Know how to wear and use appropriate level of PPE, in accordance with OSHA standards	*4.7*	*76.7*	*Demonst*	*On-site*	*Demonst Written*	*X*		Y
F	Identify agents based on signs and symptoms	*4.3*	*50.0*	*Program-med Lrng*	*On-site*	*Written Small-gp Exercise*	*X*		Y
F	Know special dangers of WMD site for perimeter determination	*4.0*	*60.0*	*Discuss*	*On-site*	*Written*	*X*		Y
F	Control the scene	*4.7*	*78.3*	*Projects Exercises*	*On-site*	*Small-gp Large-gp Exercise*	*X*		Y
F	Knowledge of WMD agents	*4.3*	*55.0*	*Program-med Lrng*	*On-site*	*Small-gp Exercise*	*X*		Y
F	Understand the use and capability of detection equipment to identify WMD agents	*4.3*	*45.0*	*Projects Exercises*	*On-site*	*Written Demonst*	*X B*	X W/ o B	R BIO
F	Know common decontamination terms and be able to implement appropriate decontamination procedures (mass,	*3.7*	*71.7*	*Self-pace*	*Distance TV*	*Written*	*X*		Y

	technical, and personal)								
F	Early recognition of victim's sign/symptoms of WMD	*4.5*	*42.5*	*Projects Exercises*	*On-site*	*Written Small-gp Exercise*	*X*		Y
F	Be familiar with emergency patient care	*4.3*	*55.0*	*Self-pace*	*On-site Distance*	*Demonst Written*	*X B*	X W/o B	R BIO
F	Perform victim rescue	*5.0*	*83.3*	*Projects Exercises*	*On-site*	*Demonst Small-gp Exercise*	*X B*		D 1 OPN RAP
F	Know how and when to contain victims	*4.0*	*66.7*	*Discuss*	*On-site*	*Small-gp Exercise*	*X*		Y
F	Be familiar with reference utilization for incident mitigation	*4.0*	*66.7*	*Self-pace Prob-solv Exercises*	*On-site*	*Demonst Small-gp Exercise Written*	*X*		R 3
F	Perform hazard control and exposure protection	*4.0*	*78.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*X*		Y
F	Identify and preserve evidence	*4.7*	*61.7*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*X*		D
F	Provide investigative assistance as required	*2.7*	*50.0*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*X*		D
F	Participate in "risk assessment"	*3.7*	*45.0*	*Prob-solv Exercises*	*On-site*	*Small-gp Exercise*	*X*		D OPN RAP
F	Participate in intelligence sharing	*4.3*	*31.7*	*Projects Exercises*	*On-site*	*Demonst Small-gp Exercise*	*X B*		R OPSEC
F	Know how to function within mass casualty incident operation plan	*4.0*	*55.0*	*Projects Exercises*	*On-site*	*Small-gp Large-gp Exercise*	*X*		Y
GA	Understand and exercise as appropriate emergency powers and declarations among local, state, private, and federal entities	*4.67*	*23.33*	*Discuss*	*Central On-site*	*Small-gp Exercise*	*XB Y*		*Y*
GA	Develop confidence building strategies within management	*3.67*	*28.33*	*Projects& Exercises*	*On-site*	*Small-gp Exercise Large-gp Exercise*	*X B*		*Y*
GA	Develop policy in support of emergency operations.								*Y*
GA	Understand role and responsibilities during a WMD incident	*5.0*	*26.67*	*Projects& Exercises Prob-solv Exercises*	*On-site*	*Small-gp Exercise*	*X B*		*Y*

GA	Coordination with EMA to design and execute continuity of public services during an incident	*3.67*	*16.67*	*Projects& Exercises Discuss*	*On-site*	*Small-gp Exercise*	*X B*		*Y*
GA	Develop a public policy vision for community recovery from a WMD incident	*4.33*	*21.67*	*Projects& Exercises*	*On-site*	*Small-gp Exercise Demonst Large-gp Exercise*	*X B*		*R*
GL	Participate in an awareness training program	*4.78*	*51.39*	*Self-pace Lecture Video 18*	*Distan ce TV N=17*	*Written N=12*	*X*		*Y*
GL	Understand decontamination equipment	*4.44*	*45.83*	*Demonst N=17*	*On-site N=17*	*Demonst N=10 Small=8*	*X*		*Y*
GL	Understand glossary of WMD terminology	*3.67*	*41.67*	*Self-pace Lecture Video 18*	*On-site N=13 CBI=4*	*Written N=16*	*X*		*Y*
GL	Understand the Integrated Unified Command structure	*4.17*	*50.0*						*Y*
GL	Use self-protection strategies	*5.0*	*56.67*	*Demonst N=16*	*On-site N=17*	*Demonst N=15*	*X*		*Y*
GL	Develop plans for response to WMD	*4.89*	*33.89*	*Prob-solv Exercises N=14*	*On-site N=17*	*Small-gp Exercise N=10 Large=11*	*X*		*Y*
GL	Develop an incident action plan	*5.0*							*Y*
GL	Understand role of agency in the EOC	*4.06*	*37.78*	*Prob-solv Exercises N=13*	*On-site N=17*	*Large-gp Exercise N=15 Small=9*	*X*		*Y*
GL	Understand Incident Management System AND unified Management System, and the agency's inclusion into a Unified Incident Management	*4.67*	*57.78*	*Discuss N=16*	*Central N=11 Onsite =6*	*Small-gp Exercise N=13 Large=7*	*X*		*Y*
GL	Understand public (local, state, federal) and private sector assets available to assist in a WMD incident	*4.06*	*30.0*	*Discuss N=18*	*On-Site N=15*	*Writen Small Large Each=6*		*X*	*Ref*
GL	Implement a media management plan integrated with other agencies consistent with that of the government administration	*3.83*	*27.78*	*Projects Exercises N=18*	*On-site N=18*	*Large-gp Exercise N=14 Small=9*	*X*		*R*
GL	Use effective operational security techniques before, during and after a WMD incident	*4.17*	*32.2*	*Projects Exercises N=17*	*On-site N=18*	*Small-gp Exercise N=12 Large=11*		*X*	*R (OPSEC)*

GL	Conduct personnel wellness and rehabilitation	*3.89*	*41.94*	*Prob-solv Exercises N=16*	*On-site N=18*	*Small-gp Exercise N=11*	*X*		*Y*
GL	Personnel Utilization Considerations	*4.39*	*42.5*	*Prob-solv Exercises N=16*	*On-site N=18*	*Small-gp Exercise N=14 Large=11*	*X*		*Y*
GL	Make appropriate communication to other agencies	*4.22*	*45.28*	*Projects Exercises N=16*	*On-site N=18*	*Large-gp N=14 Small=11*	*X*		*Y*
GL	Develop a plan to establish alternative facilities and redundant capability during a WMD incident	*4.0*	*30.28*	*Projects Exercises N=15*	*On-site N=17*	*Small-gp Exercise N=12 Dem=12*	*X*		*Y*
GL	Integrate volunteers, community groups, and individual expertise, as appropriate, into the WMD response plan	*3.61*	*26.67*	*Prob-solv Exercises N=17*	*On-site N=18*	*Large-gp N=10 Small-gp N=9*		*X*	*R*
GL	Vehicle, equipment, and facilities restoration	*3.89*	*41.94*	*Prob-solv Exercises N=11*	*On-site N=18*	*Demonst N=10*	*X*		*Y*
GL	Cost recovery	*3.5*	*30.83*	*Prob-solv Exercises N=14*	*On-site N=15*	*Demonst N=9 Small=8*	*X*		*Y*
GL	Administrative documentation completion	*3.89*	*45.8*	*Prob-solv Exercises N=14*	*On-site N=18*	*Demonst N=13*	*X*		*Y*
GL	Conduct/collect and share post-incident evaluation and documentation for “Lessons Learned”	*4.17*	*43.33*	*Projects Exercises N=16*	*On-site N=18*	*Small-gp Exercise N=13 Large=10*	*X*		*Y*
GL	Revise plans based on lessons learned	*4.11*	*36.11*	*Projects Exercises N=17*	*On-site N=17*	*Small-gp Exercise N=15 Large=7*	*X*		*Y*
GL	Conduct long term medical monitoring and surveillance								*YL (Hospital Provider)*
HM	Distinguish HazMat/WMD from routine incidents	*5.0*	*67.5*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=4 Large=1*	*X*		Y
HM	Know how to wear and use appropriate level of PPE, in accordance with OSHA standards	*5.0*	*92.5*	*Demonst N=3*	*On-site N=4*	*Demonst N=4*	*X*		Y
HM	Identify agents based on signs and symptoms	*4.75*	*58.75*	*Program Learning N=4*	*On-site N=4*	*Small-gp N=3 Demo=1*	*X*		Y
HM	Be familiar with emergency patient care	*4.5*	*66.25*	*Program Learning*	*On-site N=4*	*Demonst N=3*	*X*		Y

				N=4		*Small-gp Exercise N=2*	*B*		
HM	Perform victim rescue	*4.75*	*80.0*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp N=4 Demo=3*	*X B*		Y
HM	Early recognition of victim's sign/symptoms of WMD	*4.5*	*58.75*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=3 Large=1*	*X B*		Y
HM	Conduct agent control/containment	*4.5*	*88.75*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=3 Large=1*		X	R O-NFA
HM	Know and apply scene *and crowd* control procedures *in conjunction with Law Enforcement*	*5.0*	*85.0*	*Discuss N=2 Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=3 Lg=2 Dem=2*	*X*		D IAFF
HM	Establish hazard control zones	*4.75*	*88.75*	*Projects Exercises N=4*	*On-site N=4*	*Large-gp Exercise N=3 Small=4*	*X*		Y
HM	Know common decontamination terms (mass, technical, and personal)	*4.0*	*78.75*	*Readings Video & Lecture N=4*	*CBI N=3 (App Diff)*	*Writing N=4*	*X B*		Y
HM	Identify and preserve evidence	*4.0*	*53.75*	*Projects Exercises N=4*	*On-site N=4*	*Demonst N=2 Small=3 LgExer=2*	*X B*		D FBI
HM	Be familiar with reference utilization for incident mitigation	*5.0*	*85.0*	*Program Learning N=3*	*On-site N=4*	*Demonst N=4 Small-gp Exercise N=4*	*X*		R L
HM	Know how to function within mass casualty incident operation plan	*4.25*	*57.5*	*Projects Exercises N=4*	*On-site N=4*	*Large-gp N=3 Small-gp N=4*	*X B*		Y
HM	Participate in "risk assessment"	*5.0*	*92.5*	*Prob-solv Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=4 Large=1*	*X*		D OPN RAP
HM	Understand the use and capability of detection equipment to identify WMD agents	*5.0*	*71.25*	*Projects Exercises N=4*	*On-site N=4*	*Demonst N=4 Small-gp N=2*	*X B*		R BIO
HM	Provide site assessment and remediation	*4.25*	*71.25*	*Projects Exercises*	*On-site N=4*	*Small-gp N=4*	*X*		D

				N=4		*Lg=2*	*B*		OPN RAP
HM	Provide technical information/recommendations to special operations teams from other agencies	*4.25*	*57.5*	*Projects Exercises N=4*	*On-site N=3*	*Small-gp N=3 Lg=2*	*X* *B*		O FED
HM	Maintain data inventory of state and local resources	*3.75*	*50.0*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp N=2 Lg=2*	*X* *B*		R L
HM	Coordinate clean up with a contractor	*3.25*	*62.5*	*Projects Exercises N=4*	*On-site N=4*	*Small-gp Exercise N=4*	*X*		O FED
HM	Participate in intelligence sharing	*4.0*	*25.0*	*Projects Exercises N=4*	*On-site N=4*	*Small=3 Large=2*	*X* *B*		R OPSEC
HM	Integrate activities with EOD	*4.5*	*25.0*						R
HM	Integrate activities with Law Enforcement on scene and crowd control	*4.5*	*25.0*						D
LE	Recognize a terrorist incident	*4.5*	*37.5*	*Discuss Projects& Exercises*	*On-Site*	*Written Small-gp Exercise*	X		D
LE	Understand special hazards of a terrorism incident	*4.5*	*28.75*	*Discuss*	*On-Site*	*Written Small-gp Exercise*	X		D
LE	Know self-protection strategies	*4.75*	*25.0*	*Discuss*	*Central*	*Written Demonst*	X		D
LE	Know how to wear and use appropriate level of PPE, in accordance with OSHA standards	*4.25*	*32.5*	*Demonst* *Discuss*	*On-Site*	*Written Demonst*	X		D L
LE	Use reference material to determine appropriate PPE to wear	*4.0*	*20.0*	*Discuss Program-med Lrng*	*On-Site*	*Written Demonst*	X		Y
LE	Know and recognize types of agents	*4.5*	*25.0*	*Self-pace Program-med Lrng*	*Central*	*Written*	X		Y
LE	Recognize the need to decontaminate people and animals (process and terminology)	*4.0*	*28.75*	*Program-med Lrng*	*On-Site*	*Written Demonst*	X		Y
LE	Search for additional devices	*4.0*	*23.75*	*Prob-solv Exercises Program-med Lrng*	*On-Site*	*Demonst Small-gp Exercise*	X		Y
LE	Provide site security	*4.0*	*50.0*	*Demonst Program-med Lrng*	*On-Site*	*Large-gp Exercise*	X		Y

				Prob-solv Exercises					
LE	Know how and when to contain victims	***4.5***	*20.0*	*Discuss*	*On-Site*	*Written Oral Exm Small-gp Exercise*	X		Y
LE	Perform limited mitigation	*4.0*	*20.0*	*Demonst Projects& Exercises*	*On-Site*	*Demonst*	X		D
LE	Conduct special operations in a hazardous environment	*4.75*	*20.0*	*Demonst Projects& Exercises*	*On-Site*	*Demonst Small-gp Large-gp Exercise*		X	D L
LE	Collect and preserve evidence	*4.5*	*32.5*	*Demonst Projects& Exercises*	*On-Site*	*Demonst Small-gp Exercise*	X		D
LE	Investigate the incident	*4.5*	*28.75*	*Prob-solv Exercises Program-med Lrng*	*On-Site*	*Written Demonst Small-gp Exercise*	X		R
LE	Know how and when to operate diagnostic equipment	*3.5*	*11.25*	*Demonst Discuss*	*Central*	*Demonst*	X		R L
LE	Maintain certifications and training in compliance with OSHA and other regulations	*3.5*	*20.0*	*Discuss Projects& Exercises*	*Central*	*Written Demonst*		X	R L
LE	Direct threat assessment	*4.25*	*32.5*	*Prob-solv Exercises*	*On-Site*	*Demonst*	X		Y
LE	Perform render/safe procedures	*5.0*	*45.0*	*Demonst Projects& Exercises*	*Central & Onsite*	*Written Demonst Oral Exm*	X		Y
LE	Know when to perform the "hand-off" within the ICS system	*4.5*	*20.0*	*Prob-solv Exercises*	*Central*	*Small-gp Large-gp Exercise*	X		Y
LE	Participate in "risk assessment"	***5.0***	*15.0*	*Prob-solv Exercises Projects& Exercises*	*On-Site*	*Small-gp Large-gp Exercise*	X		D OPNS RAP
LE	Joint, regular training with other agencies	*4.0*	*35.0*	*Projects& Exercises*	*On-Site*	*Small-gp Large-gp Exercise*	X		R
LE	Integrate criminal investigation with epidemiological investigation	*4.75*	*3.75*	*Program-med Lrng Projects& Exercises*	*On-Site*	*Small-gp Large-gp Exercise*		X	R
LE	Coordinate intelligence collection	***5.0***	*32.5*	*Program-med Lrng Projects& Exercises*	*Central*	*Demonst*	X		D

LE	Write agency plan for response for different jobs within law enforcement and integrates with plans from other agencies	*3.75*	*20.0*	*Projects& Exercises*	*On-Site*	*Demonst*	X		R
PSC	Recognize the possibility of WMD incident occurrence through calls for service, dispatch patterns, and signs and symptoms	*5.0*	*25.0*	*Discuss Prob-solv Exercises*	*On-site*	*Written Self-Assesmt Small-gp Large-gp Exercise*		*X*	*Y*
PSC	Recognize the WMD implications of new technologies (such automatic vehicle locators which may trigger a detonation)	*4.0*	*7.5*	*Discuss*	*Distance TV*	*Written Self-Assesmt Small-gp Exercise*		*X*	*Y*
PSC	Understand the media-management plan	*4.25*	*20.0*	*Discuss*	*On-site*	*Written Small-gp Exercise*	*X*		*Y*
PSC	Coordinate with EMA to support interagency and interjurisdiction communications	*4.5*	*33.75*	*Self-pace Program-med Lrng*	*On-site Central*	*Demonst Small-gp Large-gp Exercise*	*X*		*Y*
PSC	Coordinate with other agencies to ensure radio interoperability, and other communication systems during a WMD incident	*4.75*	*26.25*	*Projects& Exercises*	*On-site*	*Demonst Small-gp Large-gp Exercise*	*X*		*Y*
PSC	Understand how to identify and request additional resources from other agencies.	*5.0*							*Y*
PSC	Manage and coordinate a large scale incident while maintaining routine operations (i.e., 911)	*5.0*							*Y*
PW	Recognize/distinguish devices as WMD threats	*4.67*	*28.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise Written*		*X*	*Y*
PW	Become familiar with characteristics of WMD events (identifying an explosive event, for example)	*4.67*	*26.7*	*Program-med Lrng*	*On-site*	*Small-gp Exercise Demonst*		*X*	*Y*
PW	Participate in response plan	*5.0*	*55.0*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*X*		*Y*
PW	Perform contaminated debris management for evidentiary and safety purposes	*4.67*	*38.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise*		*X*	*D Evi Co*
PW	Develop an equipment decontamination program	*4.0*	*32.5*	*Prob-solv Exercises*	*On-site*	*Demonst*	*X*		*Y*
PW	Generate a system analysis for everyday operations	*3.67*	*48.3*	*Prob-solv Exercises*	*Distance TV*	*Small-gp Exercise*	*X*		*Y*

PW	Know when and how to notify other agencies	*4.0*	*55.0*	*Discuss*	*On-site*	*Demonst*	*X*		*Y*
PW	Knowledge of the impact of WMD	*4.33*	*21.7*	*Program-med Lrng*	*On-site*	*Small-gp Exercise Demonst*		*X*	*Y*
PW	Understand the environmental aspects of a WMD event in addressing the recovery of the infrastructure	*4.0*	*21.7*	*Program-med Lrng*	*On-site*	*Small-gp Exercise*	*X*		*Y*
PW	Conduct post-incident assessment of damages, and develop short-term and long-term recovery strategies	*4.33*	*38.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise* *Self-Assesmt*	*X*		*Y*
PW	Assess vulnerability to WMD	*4.67*	*21.7*	*Projects Exercises*	*On-site*	*Small-gp Exercise*		*X*	*Y*
PW	Develop mutual aid programs and protocols for WMD response	*3.67*	*33.3*	*Projects Exercises*	*On-site*	*Large; Self-Assesmt*	*X*		*Y*
PW	Develop a plan for continuity of services	*4.0*	*43.3*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*X*		*Y*
PW	Cross-train technical support personnel	*4.0*	*33.3*	*Program-med Lrng*	*On-site*	*Small-gp Exercise Written*		*X*	*Y*
PW	Develop teams to support state and federal response assets (i.e., National Guard, US&R, and MMST)	***4.5***	*15.0*	*Projects Exercises*	*On-site*	*Small-gp Exercise*	*X*		*Y*
PW	Integrate Public Works operations with the Incident Management structure	*4.0*	*30.0*						*Y*

Appendix 5

Defining WMD Responders By Performance Task

Appendix 5
Defining WMD Responders by Performance Tasks*

Identification of Participants: The people who may be required to perform duties during the response to a WMD terrorism incident may well extend the current definition of emergency responder. As a general rule, these responders are any employees or potentially volunteers who are engaged in responding to WMD terrorism incident situations during the crisis, consequence, or recovery phases of the response operation. These people will normally be in the following disciplines: fire services, hazardous materials response, emergency medical services, law enforcement, public works, public health, and emergency management. These disciplines pertain to the Federal, state, county, and local levels. Augmentation by other disciplines such as the military is dependent on their availability at or in proximity to the site of the incident. A key point in the discussion of whom is to determine if those participating are qualified to perform duties to include self-protection against personal harm. A qualified person is a person with specific training, knowledge of the subject, and experience in the area for which the person has the responsibility and authority to control.

PURPOSE: The purpose of this section is to assist in defining the minimum competencies that emergency responders need to be qualified at the four defined competency levels. This is provided to give guidance to state and local certifying officials who certify that they have qualified individuals to respond to WMD terrorism incidents.

Tiers or Levels of Competency: Listed following is an overview of each level of competency – Awareness, Operations, Technician, and Incident Command. This format follows the established competency levels in OSHA 1910.120 and NFPA guidelines. The detailed competencies at each level offer more precise definition of what is expected of an individual qualified at each level. These are a minimum and may be added to as required at the state or local levels. These descriptions provide standardized guidance to the certifying supervisor for personnel in the organization who will be needed to respond to a WMD terrorism incident.

* Initially, ODPS adopted the competency levels described in this Appendix. These levels or tiers were well established in some disciplines and were consistent with OSHA and NFPA guidelines. In the latter stages of the development of the Training Strategy, however, it became clear that the four tiers (Awareness, Operations, Technician, and Incident Command) were most applicable to only a portion of the disciplines and represented an obstacle to the development of tasks and learning objectives in other disciplines. As a generalized alternative, three tiers, Awareness, Performance, and Planning/Management were later adopted. These three tiers were consistent with Public Health planning and were not inconsistent with OSHA and NFPA guidelines. In effect, Operations and Technician levels were aggregated into "Performance" in the final taxonomy.

WMD Emergency Responder Awareness Level: WMD emergency responders at the awareness level are individuals who are likely to witness, discover, or respond to a WMD incident and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. WMD emergency responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

An understanding of what WMD are and the risks associated with them in an incident.

An understanding of the potential outcomes associated with an emergency created when WMD and associated hazards are present.

The ability to recognize the presence of WMD in an emergency.

The ability to identify the WMD that leave characteristic and easily recognizable and discernable signs.

An understanding of the role of the WMD emergency responder awareness individual in the emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook.

The ability to realize the need for additional resources, and to make appropriate notifications to the dispatch center, communications center, or Emergency Operations Center.

WMD Emergency Responder Operations Level: WMD emergency responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site of a WMD incident for the purpose of protecting nearby persons, property, or the environment from the effects of the incident. They are trained to respond in a defensive fashion without actually trying to stop the incident. Their function is to contain the incident from a safe distance, keep effects from spreading, and prevent exposures. WMD emergency responders at the operational level have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the manager shall so certify.

Knowledge of the basic hazard and risk assessment techniques.

Know how to select and use proper personal protective equipment provided to the WMD emergency responder operational level.

An understanding of basic WMD terms.

Know how to perform basic defensive control measures for WMD and how to contain and/or confine the WMD effects within the capabilities of the resources and personal protective equipment available with their unit.

Know how to implement basic decontamination procedures for WMD.

An understanding of the relevant standard operating procedures and termination procedures.

WMD Technician: WMD technicians are individuals who respond to WMD incidents and potential WMD incidents for the purpose of stopping the incident or treating casualties. They assume a more aggressive role than a emergency responder at the operations level in that they will approach the point of release in order to prevent or mitigate the release of a hazardous substance or treat affected personnel. WMD technicians shall have received at least 24 hours of training equal to the emergency responder operations level and in addition have competency in the following areas and the manager shall so certify:

Know how to implement the emergency response plan.

Know the classification, identification and verification of known and unknown materials by using chemical, biological, radiological, or explosives field survey instruments and detection equipment.

Be able to function within an assigned role in the Unified Command System.

Know how to select and use proper specialized fully encapsulated personal protective equipment provided the WMD technician.

Understand hazard and risk assessment techniques.

Be able to perform advanced medical treatment, control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.

Know how to perform basic triage for WMD contaminated casualties.

Understand and implement decontamination procedures.

Understand termination procedures.

Understand basic chemical, biological, radiological, and toxicological

terminology and behavior.

WMD Incident Command: Incident commanders, who will assume control of the WMD incident scene beyond the emergency responder awareness level, shall receive at least 24 hours of emergency response plan training equal to the emergency responder operations level and in addition have emergency response plan competency in the following areas and the manager shall so certify:

Know and be able to implement and operate in the Unified Command System.

Know how to implement your internal emergency response plan.

Know and understand the hazards and risks associated with employees working in personal protective equipment.

Know how to implement the jurisdiction's emergency response plan.

Know of the Federal Response Plan and Terrorism Annex, state emergency response plan, jurisdiction emergency response plan and terrorism annex, and of the Federal Regional Response Team.

Know and understand the importance of decontamination procedures.

Appendix 6

Course Development Procedures

Appendix 6
Course Development Procedures

The Office for Domestic Preparedness (ODP) utilizes the Federal WMD DP Course Development and Review Program (CDARP) to guide the development of WMD domestic preparedness training courses. This program has been proposed by ODP for use throughout the federal WMD training community.

I. DESCRIPTION

CDARP GOAL: Create a transparent and coordinated effort to develop, validate, review and maintain quality WMD DP training courses for our nation's emergency responders.

The Department of Justice, Office of Justice Programs, Office for Domestic Preparedness (ODP) is proposing a Federal WMD DP Course Development and Review Program. (CDARP). To date, approximately eight federal agencies and offices have developed over 100 WMD DP training courses for state and local emergency responders. CDARP would provide a centralized, transparent and coordinated mechanism for the development of new WMD DP training courses and for the review of current WMD DP training courses for state and local emergency responders. CDARP would ensure the quality of training course content, the accuracy of course information, and compliance with applicable standards, policies and procedures at the federal, state and local levels. CDARP would strengthen the combined efforts of the federal agencies to develop quality training courses and would boost the confidence of state and local authorities with the knowledge that there is a coordinated effort by the federal authorities to provide the best possible training for the state and local emergency responder community.

The Training Resources and Data Exchange (TRADE) Group is a valuable resource for the creation and implementation of CDARP. The TRADE Group was established to ensure a unified and coordinated federal training preparedness effort and to improve the consistency and the quality of WMD training. The participating federal agencies and offices include DOJ/ODP, PHS, FBI, DOE, CDC, FEMA, TSWG, EMI, NFA, and FLETC. The TRADE Group meets every other month to exchange relevant information in the area of WMD DP training for local, state, and federal emergency responders. As an already established group representing the federal agencies and offices that currently provide WMD DP training courses to emergency responders, the TRADE Group is the foundation for implementing the CDARP process.

ODP's Centralized Scheduling and Information Desk (CSID) will also be integral in the implementation of CDARP. The CSID maintains comprehensive WMD DP training, exercise and conference event information. Monthly CSID reports are distributed to several hundred members of federal, state and local agencies. The CSID will maintain information on all courses under development and will notify federal agencies when current courses are up for review. This will ensure a centralized information source for CDARP.

ODP recognizes that each agency has an independent course development and review process. CDARP would supplement current agency processes - running parallel to or in coordination with the individual agency process. The outcome of this course development and review process would be a coordinated, articulated, and quality WMD DP training course curriculum offered by the federal agencies to state and local emergency responders.

II. OBJECTIVES

Objective 1: Foundation

Objective 2: Development Phase

Objective 3: Pilot Phase

Objective 4: Validation Phase

Objective 5: Maintenance Phase

III. ROADMAP of the CDARP Process

STEP 1: Foundation

- The TRADE Group will take the federally compiled list of WMD DP courses and distribute this list to relevant federal agency partners.

STEP 2: Development Phase

- **New Course Development**
  - The following actions will be coordinated through the TRADE Group:
    - When an agency or office initiates the development of a new WMD DP training course, notification of this course development will be made to the federal agencies.
    - Federal agencies will identify which training courses they would like to review.
    - The federal agency developing the WMD DP training course will provide information on all pertinent meetings and reviews associated with the development of the course. (This would include initial planning meetings and alpha and beta reviews).
    - Federal agencies participating in the development process will provide constructive feedback during these initial meetings and reviews.
    - The agency developing the course will gather input from each federal agency during this process.

STEP 3: Pilot Phase

- Similar to the Development Phase, the Pilot Phase allows for each federal agency to participate in relevant meetings and the piloting of the WMD DP training course under development.
- The developing agency will notify the interested federal agency partners of the date, time, location and other pertinent information regarding the pilot course.
- Interested federal partners will attend the pilot course and once again provide constructive feedback to the agency developing the course.

STEP 4: Validation Phase

- As noted above, each individual federal agency can validate its own WMD DP training course. In addition, the federal agencies participating in CDARP will also validate the course.

- **Course Validation**
  - During the validation process, the developing agency will work closely with the federal agencies to gather, incorporate and finalize comments and feedback. The developing agency should also select five to eight subject matter experts (SMEs) from relevant disciplines from state and local agencies to participate in this validation process.
  - The developing agency will send out all materials associated with the new WMD DP training course review - including relevant background information, course review agenda, points of contact and instructions to course review participants.
  - During the validation process the developing agency should review and discuss all comments provided by federal agency participants and the state and local SMEs.
  - Once the comments have been reviewed, the developing agency will reply back to the participating federal agency regarding the comments made on the course. This may occur during specific agency meetings. Final changes will then be addressed and all changes will be incorporated into the course and course materials. Each participating federal agency will then review the course and in five working days will validate the course.
  - The final outcome of this entire development and validation process will be an acknowledgment page that lists every federal agency that reviewed and validated the new WMD DP training course and a short statement that notifies the state and local first responders that the course has been reviewed and validated by every federal agency on the acknowledgement page. The statement will read "the contents of this course have been developed, reviewed and approved in coordination with... (specific agencies listed)." The seal of each agency will be displayed on the page.

STEP 5: Maintenance Phase

- Once a new WMD DP training course has been developed and validated, it will be entered into the CSID database and assigned to a particular review cycle.

- Course Review Cycle
  - Two years after the validation of the course, the agency responsible for the course will again engage a group of SMEs and the interested federal agencies to review and update the WMDP training course.
  - The review will take place through the course review process, detailed previously, to ensure the accuracy, completeness and success of the course in training state and local emergency responders.
  - Six months prior to the two year date, ODP's Centralized Scheduling and Information Desk (CSID) will notify all of the federal agencies via e-mail the course to be reviewed and information regarding the review process.
  - Maintaining the course review process will ensure that each WMD DP training course offered by a federal agency continues to provide relevant and necessary information and continues to enhance the skills of the state and local emergency responders.

IV. RESOURCES AND CORE COMPETENCIES

There are three main resources that will be utilized for CDARP:

The TRADE Group

The TRADE Group will be the driving force behind the implementation and operation of CDARP. The TRADE Group will act as the centralized coordinator for disseminating and maintaining information on the WMD training courses through the CDARP Process.

The Centralized Scheduling and Information Desk (CSID)

The CSID is an ODP asset. The CSID is a comprehensive information, management and scheduling tool for WMD DP events. The CSID is comprised of a Master Calendar, WMD DP Database and an On-Site Call Desk. The CSID will be utilized to maintain and distribute WMD training course information including the course review cycle, related SMEs and point of contact information.

Subject Matter Experts (SMEs)

Subject Matter Experts from the state and local emergency responder community will be utilized extensively during the course review process. These should be pulled from groups such as the InterAgency Board (IAB) for Equipment Standardization and InterOperability who have extensive experience working with WMD issues.

V. OPPORTUNITIES AND SHOW STOPPERS

CDARP will create and enhance transparency and coordination among the numerous federal agencies and offices involved in WMD domestic preparedness training. Through a coordinated WMD DP training course development and review process, the myriad of federal recourses being allocated to homeland defense efforts will be channeled into a constructive and cohesive effort to train America's emergency responders.

Appendix 7

Delivery Techniques

Appendix 7
Delivery Techniques

PURPOSE: To establish the delivery techniques to be used for DOJ/OJP developed WMD terrorism incident response training for the Nation's emergency responders.

PROTOCOL: The challenge is to get the appropriate training to the correct training audience. A coherent training strategy establishes the WHO, WHEN, WHERE, and HOW for delivery of the training. The WHAT is determined by the needs analysis and curriculum developers.

Training Course Focus: There are two primary foci for the training. The first is the individual emergency responder. This training focuses on information and skills the individual needs to master to accomplish their job in the WMD environment. The target audience for this training is more immense than in any other training endeavor attempted. This audience is comprised of emergency responders from all the disciplines discussed in this strategy. To get the training to the audience will require using all forms of delivery available. As with all training for the personnel who make our jurisdictions function, we have to have methods that maximize the training time available and use reasonable technologies. The second focus for training is on the jurisdiction. This training focuses on preparing the jurisdiction to respond to a WMD terrorism incident. The jurisdiction leadership requires practice in forming the multi-disciplined team that will have all the resources required to accomplish all tasks involved in both the crisis and consequence phases of such an incident.

Training Course Delivery Techniques: In general, two delivery techniques to be considered are *direct delivery* and *programmed instruction*.

> *Direct Delivery*: This is the formal method of classroom instruction that includes the use of performance-based and competency-based objectives. This type of delivery is used when instructor interface with the training audience is deemed necessary to accomplish the goals and objectives of the course, as articulated. This method is appropriate for all levels of instruction above the Awareness Level of courses. Dependent upon the complexity of the subject matter and resources required for delivery, this is most efficiently done by using a centrally developed program of instruction that includes a rigorous Train-the-Trainer component to allow maximum delivery opportunity in state-level and/or jurisdiction-level accredited training organizations. The types of direct delivery are: School-site (central training location); Work-site (training at the work-site of the audience); Video-teletraining where there is live interaction between the instructor and the learner (uses more sophisticated classrooms and technology).

> *Distance-learning Instruction*: This form of training delivery is most appropriate for courses where the goal is to impart basic information to the training audience. This method also has the potential to accommodate a large training audience. This may take

the form of traditional video or television (without interactive elements) Internet-based, computer-based, or paper-based instruction. The availability of computers and Internet access must be determined before using Internet-based and computer-based programmed instruction. This method offers information in small bits, provides immediate feedback and allows the student to work at his/her own pace. This is a good method for the Awareness Level and for some supplementary modules at the other competency levels.

Selection of Delivery Technique: An analytic process should be used in determining the delivery technique for each course. The best delivery technique should be selected for each course as there is no correct answer that applies in all cases. The following process is offered for consideration. After assessing the factors presented in STEP 1, progress in order through the determination of delivery technique to use for the instruction

STEP 1: Factors to consider in determining the correct technique:

The training audience for the course
The size of the total training audience for the course
The course objective(s)
The complexities of the skills to be mastered in the course
The availability of the internet to the training audience
The availability of computers to the training audience
The cost of the delivery method

STEP 2: Since the objective of the technique used is to reach the entire training audience, the technique and methods within the technique must work toward meeting this goal. Next decide on the delivery technique to use.

In general, use Direct Delivery when the learning objective makes it preferable for instructor to student interface due to the complexity of the skill, requirement for performance-based training feedback, or it best facilitates delivery to the target training audience.

As the first priority, use a Train-the-Trainer approach, or interactive Video-teletraining to reach the greatest training audience in the most efficient and effective manner.

As second priority, conduct courses at the work-site location of the training audience by a central training group. This gives you the maximum participation by the target audience and is especially good for use in jurisdiction-focused oriented courses. It is typically the most effective form of instruction.

As the third priority, conduct courses at regional locations in the area of the student population by a central training group. This reduces inconvenience of the participants but compromises the effectiveness for some topics.

And lastly, conduct training at a central location only with a central training group. This may well be necessary for courses dependent on facilities found at only one place or training aids that are not conducive to movement to different training locations.

Use traditional Distance-learning Delivery to reach the maximum training audience in the most effective manner when instructor to student interface is not required for learning. The requirement continues for constant student feedback on how well they are accomplishing the objectives in the course with this technique.

Use Internet-based courses if you are certain the training audience has access to and volition to use this form of training.

Use computer-based courses under the same conditions as in (1) above. These both get to a large group but must be within the desire of the training audience to use to get training return.

Use a paper-based "correspondence" courses to reach the maximum number and still use the Distance-learning Delivery Technique. This may be a combination of a downloaded Internet-base course or a printed copy of a computer-based course. The operative point is that there is student feedback during the conduct of the course.

The following table may be useful in selecting the instructional method based on the type and level of the educational objectives for a course:

Instructional Methods	**Type of Objective**				
	Cognitive: Low	Cognitive: High	Affective	Psychomotor: Competence	Psychomotor: Performance
Readings/Video	XXX	X	X	X	
Lecture	XXX	X	X	X	
Discussion	XX	XX	XXX	X	X
Problem-solving exercises	XX	XXX	X		X
Programmed learning	XXX	XX		X	

Learning projects	XXX	XXX	X	X	X
Role projects		X	XX	X	XX
Demonstration	X	X	X	XX	XX
Real-life experiences	X	XX	XX	XXX	XXX
Simulated experiences	X	XX	XX	XXX	X
Video review	X			XXX	X

In this table, the instructional methods can be described as most appropriate if:

Readings/Video -	Learner in a passive role.
Lecture -	Learner in passive role, information able to be verbalized.
Discussion -	Learner in a more active role, feedback immediate.
Problem-solving exercises -	Active learning with problem solving skills reinforced.
Programmed learning -	Material organized and presented in sequential, modular fashion.
Learning projects-	Active, self-paced, ipsative, may involve simulations, involves problem-solving, applications.
Role projects -	Appropriate for psychomotor skills, experience different roles.
Demonstration -	Passive learning for more complex skills, psychomotor especially.
Real-life experiences -	Necessary to understand, appreciate, experience - affective and psychomotor.
Simulated experiences -	Evaluation as well as training is needed.
Video review -	Evaluation, reassessment, repetition are sought.

OUTCOME: By choosing the most efficient and effective delivery technique for training in each competency level, appropriate training can be delivered to the estimated 4 million emergency responders in this Nation.

Appendix 8

Evaluation of Training
Quality Control

Appendix 8
Evaluation of Training: Quality Control

PROTOCOL: This portion of the procedures describes the assessment of the training provided for the emergency responders.

The Quality Control Process involves a continuous cycle which constantly accepts inputs for improvement of the curriculum, the instruction, and the participant. These inputs are derived from the conduct of training and exercises as well as changes in the environment.

GENERAL PROCESS:

The first aspect and key to this process is to establish a mechanism to continuously clarify and determine desired performance or competency, and deficiencies. The following are the recommended steps to organize this fact assessment part of the process.

- Organizational changes within the response force.
- Evaluation findings from training and exercises that are measured against an accepted standard received in course critiques.
- Lessons learned provided from training and exercises that are registered in the official data base.
- Law or regulation changes requiring responder actions.
- Material/system changes (Research and Development) that impact responders received as input from evaluation of National Research and Development efforts.
- New training constraints that potentially impact responder operations
- Examine performance data from actual operations conducted as recorded from direct observations and recorded in official After Action Reports.
- Specify precisely the performance desired for the responders, the degree to which they meet or exceed those levels as a result of the training
- Specify when sound practices and/or deficiencies are noted.

Definitions Applicable to Evaluation of Training:

Assessment	the formal or informal process of measuring an activity or initiative.
Norm-referenced	assessing an individual's achievement measured in comparison peers, a group or cohort, and/or historical data.
Criterion-referenced	assessing an individual's accomplishments or achievements relative to some externally defined or explicit criteria or standards of performance.
Ipsative assessment	assessment of an individual's accomplishments or

	achievements through a self-referenced or personalized criterion - self-assessment.
Formative assessment	a step-by-step process of assessing progress. Often based on a learning plan or action plan and the degree to which each element of the plan is accomplished.
Summative assessment	a comprehensive or formal confirmation of achievement, usually at the end of an instructional program.
Assessment reliability	refers to the degree to which the assessment technique or instrument produces the same range of results each time it is applied. Also refers to the assessment technique's ability to differentiate between participant's performance.
Assessment validity	refers to the degree to which the assessment ensures the knowledge, skill, ability, or achievement it is designed to measure.
Performance criteria	refers to the range or list of activities which must be demonstrated or knowledge which must be shown in order to judge the individual learning exercise adequate.
Accreditation of prior learning	the determination or ascertaining of knowledge, skills, and abilities the learner brings into the training initiative from prior experience or prior instruction.
Standards	the set of criteria or elements which have been determined, by whatever process, to be necessary for competency.
Competency	Knowledge, skills, and abilities which, together, account for the ability to deliver a specified professional service.

Methods which can be used to assess the training:

- Rating forms
- Self-assessment forms
- Essays on trainee's experience
- Written or computer-interactive tests
- Questionnaires
- Oral Examinations or Individual interviews
- Group interviews or Group discussions
- Direct observation
- Exercises or Performance Audits

It is noted that Exercises or Performance Audits represent the highest level of assessment and are appropriate for the most complex skills and activities but not appropriate for lower level objectives. Two type of assessments are:

process - the data addressing the progress and process of instruction, frequency of activities, attendance of participants, rates of use of resources; and,

product - data showing the impact or results of the instruction on the accomplishment of tasks, the effectiveness of training, and the diminishing of problems for which the training is designed to ameliorate.

Product assessment is preferred over process assessment.

The product or ultimate change may be measured in actual events or through change in the organization or it may be measured by proxy through exercises.

Program Assessment: Program assessment may be holistic and include the entire program or initiative. It may also be more focused and address each course or category of offering. If it is holistic, the program should have a statement of purpose or "mission" statement described earlier. This statement serves as the goal against which the program is measured. The assessment of a program's efforts to accommodate such broadly worded statements is almost always subjective but the subjective assessment should be justified in an evaluation plan/report and the justification should be articulated. The assessment should have points of evidence or proof that the assessment is appropriate.

In addition to curriculum goals, curriculum objectives must be developed early in the process. These objectives should be measurable and may include some of the same terms used in goals but the objectives are stated in more specific terms which lend themselves to evaluation and assessment. Examples of curriculum objectives would be:

Ten percent of emergency department personnel will be trained in triage procedures (assessment) each year in the target cities/hospitals;

Every state will have at least five persons trained to develop state-specific reaction (application) strategies for emergency events.

Course objectives should be refinements of the broader curriculum goals. They should be stated in performance or behavioral terms - the knowledge, skills, and abilities which the participants are expected to demonstrate in the abstract or broadest terms. Additionally, the following questions must be answered in assessing the training program:

Is the scope of the curriculum adequate?
Is the scope of the curriculum realistic?
Is the curriculum relevant?
Is there balance in the curriculum?
Is curriculum integration desirable?

Is the curriculum properly sequenced?
Is there continuity of programs?
Are curricula and courses well articulated between levels?
Are types of learning transferable?

The answers to these questions, as well as others which can be developed for a particular type of training, can help to restructure the curriculum, the courses, and the levels of instruction. Additionally, the needs and issues will change over time and this change must be accommodated in the curricular change.

Instructional Assessment: There are actually two aspects of assessment of the instructional component, the assessment or evaluation of the instructors and the techniques, process, and materials used by the instructor. The other aspect of instructional assessment is the evaluation of the participants during the instruction, not simply after the instruction is over. Each of these will be addressed separately.

Assessing Instructors. Instructors may be evaluated using any of three methods:

Participant survey: This, the most traditional and widely used technique, is a cost-effective, efficient method of assessing instruction by those who have observed the greatest portion of that instruction - the participants. Often this assessment will be norm-referenced and issues associated with assessment reliability and assessment validity must be addressed. Complicating the picture for this approach, is the fact that multiple instructors is problematic. When a variety of instructors are used or when classes or sections are "team-taught," the survey results may be measuring what they are intended to measure or something else.

Ipsative or Self-evaluation: Requiring instructors to evaluate their own effectiveness is a useful technique. Instructors, particularly those who hold certification as instructors and/or advanced degrees, understand the expectations of the process and the degree to which they meet those expectations.

Direct observation. A time-tested method of assessing instruction is to observe random portions of the instruction. If normative assessments are to be used, there must be a standardization of questions or dimensions used in an observational assessment.

In addition to these methods, a passive should be employed involving the examination and evaluation of instructional materials, including syllabi, handouts, and presentation files.

Participant Assessment: Impact assessment is best accomplished using a "summative evaluation." Summative evaluation is the assessment that takes place at the end of a course or unit. For learning objectives in the cognitive domain, written examinations (post-tests) are frequently used means of summative evaluation of instruction. The two types of "measurement"

of participants' performance are norm-referenced and criterion-referenced measurements.

1. The main function of norm-referenced measurement is to ascertain the student's relative position within a normative group.
2. Either general conceptual outcomes or precise objectives may be specified when constructing norm-referenced measurement.
3. The criterion for mastery is not usually specified when using norm-referenced measurement.
4. Test items for norm-referenced measurement are constructed to discriminate among participants.

Criterion-referenced assessments measure the participant's achievements against a predefined "standard," criteria or widely accepted performance level. The criteria may be the learning objectives formulated prior to the course or the behavioral objectives prepared when the course was designed. One distinct advantage of the criterion-referenced assessment approach is its ability to influence the future development of the curriculum.

1. The main function of criterion-referenced measurement is to assess whether the participant has mastered a specific criterion or performance standard.
2. Complete behavioral objectives are specified when constructing criterion-referenced measurements.
3. The criterion for mastery must be stated for use in criterion-referenced measurement.

Competencies suggest the presence of objective criterion so a criterion-referenced assessment is most consistent with that approach. Competency can be defined as the knowledge, skills, and abilities which, together, account for the ability to deliver a specified professional service. Competency-based instruction and performance-based instruction involve the determination of objectives, describing the objectives in terms of criteria or competencies, and assessing the participant's progress, relative to the criterion or competencies. The use of "portfolios" is an assessment tools to measure performance of authentic or real life tasks.

The penultimate method of assessing performance is through live exercises combined with lessons learned. Exercises can be viewed as the last, most realistic training module and the one in which the participant or agency is expected to operationalize the information gained in other training modules.

Appendix 9

Screening Sheet for New Or Existing Courses

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Screening Sheet for New or Existing Courses

Audience (Participant/Discipline)Title or Name and level of activity:
Stage of Entry to Situation:
Tasks by Participant:

Terminal Objective (Ultimate Performance)

Enabling Objectives (Incremental Performance)
Expectation of Previous Training, Existing Proficiencies, or Skill Level:
Position in Taxonomy (Approximate or Preferred)
Cognitive
Affective
Psychomotor

Training Content Narrative (comments on identifying and sequencing (**N**)ecessary or (**D**)esired Knowledge, Skills, and Abilities by this category of participants):

Appropriate Instructional Methods
Readings/Video
Lecture
Discussion
Problem-solving exercises
Programmed learning
Learning projects
Role projects
Demonstration
Real-life experiences
Simulated experiences
Video review

Appropriate Delivery Method(s):

TTT:
Justification for Central Site:
Justification for Work-Site:
Justification for Regional:
Special Equipment or Exigencies:
Grouped/Team Instruction Necessary:
Individualized Instruction Appropriate:
Self-Paced:

Evaluation Methods:

Ipsative/Norm Referenced/Criteria Referenced:
Formative/Summative:
Written/Demonstration/Exercise: